THE AUTOMOBILE

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GLIDDEN TROPHY AWARDED TO PERCY PIERCE.

PERCY P. PIERCE was awarded the Charles J. Glidden touring trophy by the Glidden Tour Commission at a meeting held August 2, in Boston, in the clubhouse of the Massachusetts Automobile Club. Mr. Pierce not only completed the tour with a perfect score, fulfilling all the conditions and having no mechanical trouble, but in addition be received the votes of fifteen of his competitors, which was more than twice as many as were received by any other participant in the July run of 870 miles from New York to Mount Washington and return. Mr. Pierce, who drove his Pierce Great Arrow car practically all of the way himself, was accompanied by his father, George N. Pierce, his mother, and Miss L. J. Moody. He made an ideal tour of the trip, thereby fulfilling in spirit as well as in the letter of the conditions the purpose of the contest.

Four other contestants who also made perfect scores were considered by the members of the commission before making the award. These were Ezra H. Fitch, White; Ralph Coburn, Maxwell; S. B. Stevens, Darracq, and J. C. Kerrison, Cadillac.

PERCY P. PIERCE AND PARTY STARTING FROM THE PLAZA, NEW YORK CITY, AT THE COMMENCEMENT OF THE GLIDDEN TOUR.

The method of selecting the winner has not been made public, further than the statement that the Commission acted in accordance with the votes of the contestants. No official observers were carried, the contestants as a whole observing the

performance of the competing cars, and at the finish of the tour voting for the three entrants whose cars, in their opinion had made the best records. Besides this expression of opinion on the part of the contestants, the Commission took into consideration the selling price of each car, its seating capacity, number of passengers carried, weight, repairs made en route, operating expenses, hill climbing ability and compliance with the conditions of the tour.

First-class certificates were given to twenty-two contestants who completed the tour and arrived at all night controls before the official closing time, as follows: Percy P. Pierce, Pierce, winner of the Glidden trophy; Ezra H. Fitch, White; Ralph Coburn, Maxwell; S. B. Stevens, Darracq; J. C. Kerrison, Cadillac; Augustus Post, White; George Otis Draper, Packard; E. A. Gilmore, Rambler; W. N. Epping, White; W. C. Temple, Pierce; A. L. Pope, Pope-Toledo; Harold L. Pope, Pope-Tribune; C. E. Walker, Pope-Hartford; Robert Lee Morrell, Locomobile; A. W. Church, Decauville; Walter C. White, White; R. E. Olds, Reo; R. M. Owen, Reo; Carl H. Page, White; E. H. Cutler, Knox; Julius Mehlig, Knox, and B. Briscoe, Maxwell.

Four second-class certificates were awarded to others who completed the tour but failed to make one or more of the controls on time. These were given to C. W. Kelsey, Maxwell; Mrs. Joan N. Cuneo, White; C. J. Edwards, Cadillac, and George H. Tyrrell, White.

Present at the meeting of the cup commission were Charles J. Glidden, donor of the trophy; Elliott C. Lee, president of the American Automobile Association, chairman; A. G. Batchelder, acting for Dave H. Morris, representing the American Automobile Association; George E. McQuesten, representing the Automobile Club of Great Britain and Ireland. William K. Vanderbilt, Jr., representing the automobile clubs of France and Germany, could not attend.

Following the awarding of the trophy and granting of the certificates, the commission voted to highly commend the work done by the Knox and Packard trucks (regarding which some interesting data is published in this issue in connection with "Types of Commercial Vehicles on Sale." Votes of thanks were given to Augustus Post, chairman of the A. A. A. touring committee, and to M. L. Downs and A. B. Tucker, special representatives of the tour commission.

The question of the tour for 1906—trophy conditions, route and the like—were placed in the hands of the touring committee of the A. A. A. No official expression could be had regarding the probable conditions, but it seems to be the opinion that on future tours an official observer should be assigned to each car, and survivors awarded certificates in several grades according to individual performances, instead of being given practically identical certificates regardless of delays and repairs.

Concerning the Recent Transcontinental Race from New York to Portland, Oregon.

By JAMES W. ABBOTT, Formerly Special Agent U. S. Office of Public Roads.

OF that vast stream of infatuated Argonauts which in 1849 poured in ever-swelling tide across prairie, plain, desert and mountain to the new-found gold diggings in California was one Hosea B. Horn. With beneficent purpose to enlighten those who might follow him through the mysteries and hardships of a then uncharted trail, after he had reached the goal of his pilgrimage he published a most intensely interesting and valuable little book, which he entitled "Overland Guide from U. S. Indian Sub-Agency at Council Bluffs on the Missouri River to the City of Sacramento, California." In his preface, dated September 1, 1850, he says: "The distance from place to place is accurately shown, and each camping place particularly pointed out, so that the emigrant may know as well in the morning at what point he must camp as he does in the evening, thus saving many a mile's drive over a bad road in the dark. All the mineral and other poisonous waters near the road are carefully pointed out, and the distances from each to pure water given, so that whoever pays attention to it need not lose their teams, as hundreds did this as well as last season, for the want of such a book as this." And so he gives the route with great particularity, distances from point to point, and total distances from "Council Bluffs Agency Ferry, Wheeling, Clark & Co., proprietors, of the Ferry," to Sacramento, Cal.

There is going on to-day a movement toward the Pacific, involving more people than the gold excitement allured, even when the frenzy was at its height, and destined to be equally as important in epoch-making history. I believe the time to be close at hand when the automobile is to become a factor in this movement, and when information regarding route and actual conditions will be as cordially welcomed as was the very opportune little volume here referred to.

The recent transcontinental race was by no means undertaken merely to exploit the merits and virtues of a simple and inexpensive little car. A more important purpose was to bring vividly to public attention a clearer knowledge about all phases of existing transcontinental highways. In the limited space of such an article as this it is manifestly impracticable to give in minute detail all the information which might be desired, but an effort will be made to cover the subject partly in detail and partly by suggestion of fruitful sources of information.

The goal of the trip was the annual convention of the National Good Roads Association, called to open in the auditorium on the grounds of the Lewis and Clark Centennial Exposition at Portland, Oregon, at 2 P. M., June 21, 1905.

The first question to be decided was route to be taken. There are many gateways between New York and the Pacific, and it was by no means a simple question to say in advance with minute particularity what line should be traversed to bring the winner to his journey's end within the time allowed.

Our latter-day prophet, Hosea, said in his introduction: "Council Bluffs is the natural crossing of the Missouri River, on the route destined by nature for the great thoroughfare to the Pacific. This was the road selected by nature's civil engineers, the buffalo and the elk, for their western travel. The Indians followed them in the same trail; then the traders; next the settlers came." While Hosea, with pardonable license, may have claimed for the buffalo and the elk an initiative in trail blazing which precedes the dawn of history, it is a remarkable fact that the "civil engineers" who came two decades after Hosea with the iron trail adopted the location of their alleged prototypes. The desire for a railroad line to the Pacific carrying the nation's commerce with the Orient, which had been a fascinating dream for nearly fifty years with the American people, was realized at last, and when the dream came true Hosea's prophecy was fulfilled.

It was clear that the proper route to Portland should cross the Missouri River at Council Bluffs, where splendid steel bridges long since displaced the ferry of Wheeling, Clark & Co. which had been such a source of revenue in those primitive days.

Horn's book mentions eleven ferries across the Mississippi, but from the advertisements which the thrifty author publishes it is evident that in his time the principal crossings were at Dubuque, Davenport and Burlington. It also seems evident that these three routes converged at Des Moines, from which place there was one main road to the ferry crossing.

For the automobile trip the Davenport crossing was selected, the route followed being practically that shown on the Mendenhall map through Aurora, Geneseo and Moline, into Rock Island, and crossing through the Government reservation.

The start from New York had been made on May 8, from which date forty-four days would elapse before the opening of the convention. That date for starting was suggested by the writer, assuming that the route to be traversed would be a little in excess of 3,500 miles, and that eighty miles a day should be allowed, so as to safely cover all the contingencies of a trip about which there were so many uncertain factors.

On the eighth, ninth and tenth, climatic conditions were reasonably propitious, and Buffalo was reached far ahead of average schedule time. Then the heavens opened and the floods came down. For more than a thousand miles the roads were just such as history tells us they had in England till long after the reign of Queen Elizabeth. Instead of being discouraged and hopeless over the conditions which this trip developed, let us rather take heart and, seeing how the country roads of England to-day are like the driveways in a park, let us rather have faith in a time to come, when even Iowa shall see the truth as it is and know that comfort and economy in highways are not incompatible.

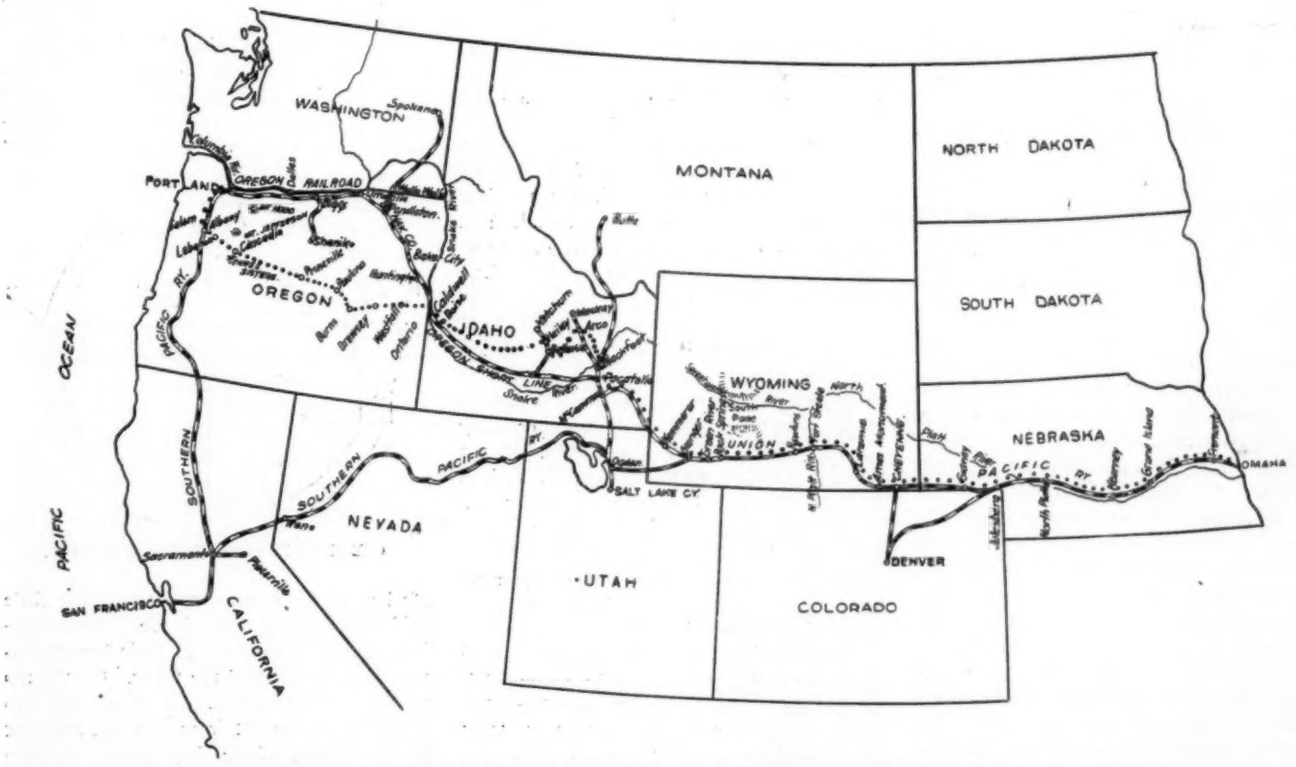
Of course, when anything goes wrong there are plenty to say: "You might have known better. Had you been guided by the light of such intelligence as is happily exemplified in us, you might have escaped this pitfall into which you have blundered so heedlessly." So when the roads in places began to resemble a Hackensack meadow struck by a tidal wave, with bays and inlets, capes and islands never found on the maps, and the cold, pitiless rain was trying to extinguish in the boys any remnant of vitality which had survived the trials by immersion in mud and water, there were lots of cheerful idiots, dry and warm themselves, to console them with the opportune advice: "You ought to have started a month later."

This was a subject to which I gave very careful thought and study throughout the entire trip. My conclusion was that no mistake whatever was made in the time of starting, in view of the date fixed for the meeting of the convention in Portland, but that if the trip were not subject to any time limit, it would be better in the average year to defer starting at least until the middle of May. That would allow another week for an Eastern winter to relax its final hold, and for the roads to become settled, dried, smoothed and inviting.

In setting the time for a transcontinental trip the controlling feature which will be ignored only at imminent peril is that great chain of mountains rising far up in British Columbia and runing for fifteen hundred miles until it shades down and disappears in the desert of Southern California. Through Oregon and on to the North this is known as the Cascade Range, because the mighty Columbia, the father of Northern waters, cuts its way through it to the sea, and while passing Mount Hood, one of its majestic, snow-mantled peaks, the river goes merrily tripping and dancing in its gentle fall over the famous Cascades. In California it is known as the Sierra Nevada, the Spanish for Snowy Range, because the snows of heaven fall and gather on it to greater depths than on any other mountains on the continent of commensurate height and latitude. Woe be to the man who presumes to cross this range in an automobile sooner or later than the time when nature is pleased to invite him. This varies in different years.

A fair average date of opening for the Cascades is about June 1, and for the Sierras about July 1. There is generally a storm about the time of the September Equinox in which snow gathers in great drifts upon the mountain tops along this range. Ordinarily this storm is succeeded by ideal weather. The snow melts away and a sort of Indian summer with autumn tints and golden haze comes to charm the traveler and lull him to unguarded confidence. Sometimes far into October he can cross the passes on either the Cascades or the Sierras with exhilarating delight. And sometimes they close with this equinoctial storm and stay closed, and the traveler who, in presumptuous desperation, should attempt to cross these huge snow banks in an automobile would come to grief, as they do in Arctic regions when winter prematurely shuts them in with ice.

Excepting for this range, any time during the period from the middle of May to November 1 can be selected with warranted assurance for a transcontinental trip in an automobile. We happened to encounter very heavy storms in May. In the latter part of June of this year there were greater floods still in Nebraska and Iowa. The greatest damage done along that route by flood in recent years was two years ago somewhere about the middle of June. This cleared up, and Dr. Jackson slid through after his voyage of discovery without serious interruption from the elements. Just a few weeks later Tom Fetch left Denver for New York in most gleeful mood. He had challenged fate and defied ridicule by proclaiming openly and confidently that he was going to do a thing which many had tried before, but none had accomplished. Great oracles in the automobile world had



SKETCH MAP OF ROUTE FOLLOWED BY THE TRANSCONTINENTALISTS FROM OMAHA, NEBRASKA, TO PORTLAND, OREGON.

gone on record as saying it could not be done in the then state of the art. Tom had done it, and now in triumph he was going to round out his achievement with a record-breaking run to New York. Skies were bright, roads dry, and nature smiled and beckoned him on. He had hardly crossed the border into Nebraska when the floods came as suddenly and as violently as they did on us just this side of Buffalo. He dived into one mud hole after another in that State, and had to swim nearly all the way across the State of Iowa.

So there you are. The record of one year's weather is generally nullified by the next, and in planning trips by automobile about the only reliance we have is the calendar.

But if the boys were all right as to time of starting, there was one serious mistake made. In their zeal to make progress they traveled through storms for which they ought to have laid up. It is an awful hazard to health, vitality and machinery to try to plow through rain and mud as they did at times, and in my judgment the ultimate resultant of progress was loss.

Although diligent inquiries were made in Chicago from all sources of probable information as to the best route to Davenport, and the route followed which we supposed would prove the best, we concluded after the boys had met that horrible experience in the mud east of Moline that we had not been sufficiently informed. The route unquestionably was a good one for dry weather, but we believed that one might have been selected which would have been less seriously affected by the rains. So at Davenport and Des Moines we made a most drastic search for specified information. We sought the road which would afford the least impediment in wet weather—one following the ridges rather than the bottoms, a roadbed of sand rather than of clay, and a route avoiding as much as possible steep, slippery and narrow hill roads. We did not decide on any portion of the line until it had been distinctly confirmed as most desirable by at least two persons who knew all about it from their own experience. The following is a careful description of the line thus selected:

ROUTE FROM DAVENPORT TO DES MOINES.

From Davenport N. W. 6 miles to Fulton road; due W. 11 1-2 miles to Durant; S. W. 1 1-2; S. 1-2 mile; W. 4 miles; N. 1-3 of a mile; W. 1-2 mile to Wilton; W. 1 1-2 miles; S. W. 1-2 mile; S. 3-4 of a mile; W. 1 mile to Moscow; go through business portion of town of Moscow and recross railroad track just east of railroad bridge which crosses Cedar River; W. to bridge across the river; first turn to the left S. W. 1 mile; S. 1-3 of a mile; W. 4 1-2 miles; S. 1-3 of a mile across C., R. I. & P. R. R. track; N. W. 2 miles; W. 2 miles to Liberty; N. W. through town to N. W. corner; W. 3 1-2 miles; N. W. 3 1-2 miles; W. 1 mile; N. W. on Bloomington road 5 miles; W. 1 1-2 miles to Iowa City; 12 miles on Old Man's Creek road; S. W. to Windham; W. 3 1-2 miles to fork of road, take to right-hand one; N. W. to Williamsburg, 12 miles; W. 6 miles; N. 1 mile; then a little N. of W. along the divide 18 miles to Brooklyn; W. 15 miles to Grinnell; keep as near as possible to Rock Island railroad; S. W. 5 miles to Turner; cross C., R. I. & P. R. R.; S. 1 mile; W. 4 miles; S. 6 miles to Kill Duff; W. 1-2 mile; S. 2 miles; W. 1 1-2 miles; N. 1-2 mile to cemetery; W. 4 miles to Reasnor; cross Skunk River; W. 3 miles; N. 1-2 mile to a church; W. 7 miles; N. 1 mile to Prairie City; W. 8 miles to Ivy; W. 9 miles to Des Moines.

DES MOINES TO COUNCIL BLUFFS.

W. on Grand avenue road 12 miles; N. 1-2 mile; cross C., R. I. & P. R. R.; N. 1-2 mile to C., M. & St. P. R. R.; W. along C., M. & St. P. R. R. 1 mile to Waukee; W. along C., M. & St. P. R. R. 7 miles to Adel; W. 9 miles to school; S. 1 mile to Redfield; S. 4 miles; W. 1 mile; S. and W. 2 miles to Dexter; S. 1 mile; W. 5 miles to Stewart; N. 1 mile; W. 5 miles to Menlow; W. 5 miles to cemetery; S. W. 1 mile to Casey; W., winding roads, 7 miles to Adair on summit of divide; W. 1 1-2 miles; S. 1 mile; W. 1 1-2 miles; S. 1 mile to turn just N. of C., R. I. & P. R. R.; W. 1 1-2 miles; S. W. 3 miles to Anita; S. W. along N. side of C., R. I. & P. R. R. 7 miles to Wiota; S. W. 4 miles to Grove City, which is S. of C., R. I. & P. R. R.; N. W. 2 miles to Atlantic; W. 1 mile, and cross C., R. I. & P. R. R. to turn in the road; S., again crossing C., R. I. & P. R. R., 1 1-2 miles; W. 1 mile, again crossing C., R. I. & P. R. R.; S. 1-2 mile; W. 1-2 mile; S. 3 miles, again crossing C., R. I. & P. R. R.; S. W. 1 1-2 miles to Louis; W., a little zigzag, 5 miles; N. 1 mile; W. 11 miles to Oakland; 30 miles to Council Bluffs, following poles of Postal Telegraph Company. Council Bluffs is a very little south of due west of Oakland.

The experience with this route was so favorable that I unhesitatingly commend it to the attention of all who may hereafter cross Iowa in a car until the A. A. A. shall by a carefully discriminating survey give official sanction to one found better.

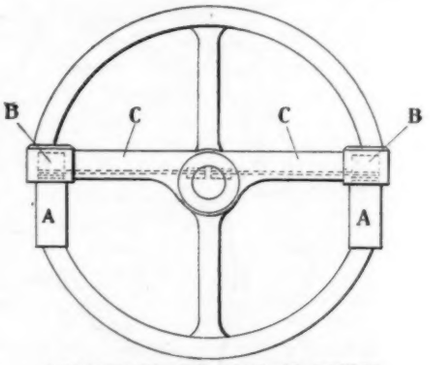
We had an impressive object lesson of the penalty of disregarding it. Probably every reader of this article is familiar with the photographs of that harrowing scene which transpired on the Skunk River bottom. Old Scout and Old Steady appear to be sinking, with hatches open and decks submerged, to unknown depths, while Huss and Megargel view from some footing far beneath the waves the impending fate of their apparently doomed craft. In determining a route for them the perils of that Skunk River bottom had been a source of deep concern. Reasnor had been selected as the strategic point of crossing for definite and well-conceived reasons. A reference to the route as given here will show that in this part it is tortuous and very indirect. Some inspired (motives unknown) liveryman at Grinnell outlined for them a less devious course, which the boys adopted, and near Newton plunged without warning into a watery abyss from which their escape was really miraculous.

(To be continued.)

Clement Engine Control.

A new four-cylinder Clement car, brought out this year by the firm of A. Clement & Co., of France, with which M. Clement was connected before he established the firm of Clement-Bayard, retains many of the features of the original machines, and possesses in addition individual features which make the machine distinctive. Among these is the new spark and throttle controlling device, illustrated herewith.

Instead of the usual levers for this work, placed on either the steering wheel or on the steering column, there are two handles *AA* resembling the grips of a bicycle, placed on the rim of the wheel at diametrically opposite points. Each handle carries a small drum *BB* at its forward end—that is, the end farthest from the operator; and a small



CLEMENT ENGINE CONTROL DEVICE.

steel cable winds on each drum. The little cables pass down through the hollow steering column, connecting at their lower ends with the throttle and the timer. On the top of the steering column, in a bronze cap, two arms *CC* branch out from this cap, reaching to the drums, where they spread out into casings that completely cover the drums. The cables pass through the hollow arms after leaving the post, and thus are entirely enclosed and invisible. Fine ratchets are formed in the ends of the handles, so that they are automatically retained in any desired position.

The advantages claimed by the manufacturers for this device are that the clothing of the operator cannot catch and accidentally alter the adjustment of the control, and that the control of the car when running at speed is more readily accomplished than by the old method.

Some of the automobiles acquire terrific speed by using both gasoline and alcohol for motive power—the alcohol being inside the chauffeur.—*Superior (Wis.) Telegram.*

TYPICAL COMMERCIAL VEHICLES ON SALE.

PROGRESS in the development and improvement of the self-propelled vehicle for business purposes appeals less to the popular interest than similar advance along the line of pleasure vehicle building, but is not the less pronounced and spectacular. One has but to look back mentally to the light, unreliable and uneconomical steam and electric delivery wagons that made their appearance in the late nineties and compare them with the great variety of sizes and styles of electric and gasoline commercial vehicles in use to-day in many of our large cities to grasp the advances that have been made quietly and almost unobserved in the last five years. Since comparisons are odious, however, let it suffice to emphasize the superiority of the vehicles of the present time over their predecessors only by describing briefly the types of cars offered for business purposes by the manufacturers at the present time, stating in addition that they are built more substantially and of better materials than formerly and are made to carry heavier loads with greater economy in operation and repairs.

In commercial work dependability is one of the foremost considerations, for, while a merchant or manufacturer will in some cases be willing to adopt power vehicles for delivery or transfer purposes, even though he may not be convinced that they will be more economical than horse-drawn wagons, the imperative demands of business will not permit of the employment of a system that cannot be relied upon for regular service day in and day out through all seasons of the year.

The difficulties of producing vehicles that would fulfil these requirements through the heavy snowstorms and on the ice-coated streets during the severe Northern winters as well as through the hot summer weather have been enormous, yet the large number of commercial vehicles now in use and their rapidly increasing number indicate clearly enough that success has attended the efforts to overcome them. The question now no longer is, Will the motor wagon do the work? but, At how much less expenditure of money and time will it do the work of my horse-drawn wagons? and, How many days in the year will the machine be laid up for repairs?

It is regretted that we have been unable to obtain sufficient data extending over any considerable period to make it possible to present reliable averages of cost of operation for the different classes and types of self-propelled vehicles, but some recent records that have been furnished will throw light on the subject.

Taking the data furnished to the Packard Motor Car Company by eleven different concerns using the Packard gasoline or explosion engine two-ton truck in Detroit, Chicago, Buffalo and Baltimore, for one day each in May and June of the present year, we find that the average performance was as follows: Mileage, 26.7; net running time, 2 hours 44 minutes; miles per hour, 12.4; average distance in miles between stops, 2 1-2; gasoline consumed, 3.3 gallons; average load carried, 2,691 pounds.

The foregoing represents the average full day's work, although the actual running time does not exceed 2 3-4 hours. The rest of the time was consumed in stoppages to receive and deliver goods. The short distances between stops are significant. In some cases as many as fifty-seven stops have been made in traversing a distance of sixty and a half miles in a total elapsed time of 8 hours 48 minutes. Again, eighty-one calls have been made in a day in traversing 39 5-8 miles in an elapsed time of 8 hours 31 minutes. As gasoline retails for about 20 cents a gallon, it will be seen that the cost per day for fuel averages only 66 cents. About 40 cents a day might be added to this for lubricating oil and grease.

Similar data for six different days in February and March resulted in the following averages: Miles traversed, 28.6; net running time, 3 hours 17 2-3 minutes; miles per hour, 8.6; miles between stops, 2; gasoline used, 2.3 gallons; load, 3,283 pounds; number of stops made, 29.3.

As a demonstration of what a gasoline truck can do on country roads, the trip of the Packard and Knox trucks from New York to Mount Washington and return in company with the Glidden tourists was a valuable demonstration. The former, loaded with 2,500 to 2,700 pounds of baggage, covered from 68 to 140 miles a day, the average being approximately 120 miles. Starting between 1 and 2 o'clock in the mornings, the truck usually reached its destination for the day by or before 6 P.M. This same truck climbed the famous road up to the top of Mount Washington. The figures for the total period of the tour are given on the following page.

The Knox 2,500-pound truck, which is geared to eighteen miles an hour, and carried a load of suitcases weighing 1,200 to 1,500 pounds, started at or soon after 6 o'clock each morning on the touring car schedule, and usually finished its day's run in from seven to eleven hours. Both trucks were fitted with solid tires. These demonstrations show the adaptability of such trucks for long-distance work over ordinary country roads. The following data for the trip of the Knox truck will be of interest:

The total distance covered during the trip, including various side trips and four days' regular baggage wagon service between the Mount Washington Hotel and the railroad station, was 1,001 1-4 miles. The total running time was 68 hours 35 minutes, the average mileage per hour 14 5-8. The total consumption of gasoline was 107 1-4 gallons, at 20 cents a gallon, amounting to $21.45. Four and a half gallons of lubricating oil were used, at 50 cents a gallon, amounting to $2.13. The only replacements made on the vehicle were two chain links and one exhaust valve, amounting to $4. The total operating expense for the eleven days' trip, covering more than 1,000 miles, was $27.58, exclusive of driver's wages and storage and cleaning.

Some useful figures regarding the work done by the light Olds delivery wagons in regular service in Detroit are given by the Auto Express Company of that city. During eleven weeks last summer one of these wagons covered a total mileage of 5,016, averaging 76 miles a day, and making an average of 98 stops per day to deliver packages. During the eleven weeks the operating expenses were as follows: Gasoline, $31.95; lubricating oil, $4.02; repair labor, $13.80; repair parts, $7.06. Total, $56.83. Add to this: Driver, $114.40; jumper boy, $44. Grand total, $215.23. The average cost of operation is given by the Auto Express Company at $19.56 a week, and the cost per mile of operation, including wages, as 4.2 cents. This wagon missed only one trip out of 198. Later in the season the company added two similar vehicles to its equipment, one of which ran 540 miles in nine days and delivered 1,323 packages at a cost of $4.91 for repairs, gasoline and oil. The other covered 867 miles during the same period at a cost of $8.62 for the same items. Such a large number of stops, of course, is a severe test of the clutch mechanism and brakes. The cars were fitted with Swinehart solid tires.

By way of comparison, the company stated that at least eight horses would be required to do the same amount of work steadily. The company's business rapidly increased until in October it was operating eighteen delivery vehicles and handling the delivery business of about 150 wholesale and retail stores in Detroit.

The foregoing few examples give some idea of the kind of work that the modern self-propelled commercial vehicles are performing and the cost at which their work is done. There has never been any question that they could do more work in a given time than horse-drawn wagons of equal size, and now that their dependability and economy is being demonstrated conclusively they are coming rapidly into general use.

It is interesting to note that the light

Data of Trip of Packard Baggage Truck with Glidden Tourists.

July	Route.	Miles.	Elapsed Time H. M.	Gasoline Used, Gals.	Lub. Oil Used, Qts.
11	New York to Hartford	121	8:32	11	1 1-5
12	Hartford to Boston	121 1-2	9:13	11	1 1-4
13	Boston to New Castle	63	5:00	5 1-4	3-4
14	New Castle to Bretton Woods	108	*17:45	9 1-2	1
16	To Base Mt. Washington and return	80		10	1
18	Ascent and descent Mt. Washington	16			
19	Bretton Woods to Concord	103	†19:00	10	1 1-4
20	Concord to Worcester	99	9:00	9	1
21	Worcester to Lenox	100	10:30	9 1-3	1
22	Lenox to New York	150	16:15	14	1 1-2
			95:15	89	10

* Lost 2 1-4 hours by taking wrong road in the dark; 2 hours assisting touring cars over bad roads and hills; 1 hour for breakfast.

† Lost 5 hours getting out of deep ditch into which truck had skidded in turning out for frightened horse.

steam delivery wagon has given way to the light gasoline business wagon, and that the heavy steam truck that has had considerable vogue in England has made little progress in America, notwithstanding a number of expensive attempts have been made by American companies to produce such vehicles, to burn coal, kerosene or gasoline. The gasoline or explosion engine business wagon in the heaviest truck, as well as in the light delivery wagon and medium-size vehicle types, has leaped to the fore even more quickly than the gasoline pleasure vehicle did. Electric commercial vehicles have consistently held their own, and still predominate in all types and sizes, though their supremacy is seriously threatened now by the gasoline vehicles, which have the advantage in economy of operation and maintenance and are adapted for long trips over country roads, while the electrics are confined to city use and to a mileage of about thirty miles on one charge of the battery.

In the following pages are illustrated and described a number of typical commercial vehicles of different types, sizes and styles of bodies adapted to all sorts of work.

Cadillac Light Commercial Car.

The regular Model F touring car chassis made by the Cadillac Automobile Company, of Detroit, is fitted with a special, roomy, closed body, to be used for light delivery work. Its carrying capacity is 400 to 600 pounds, but in actual service the vehicles have been loaded much heavier than recommended yet have not failed in any way. The inside dimensions of the body are: Length, 42 inches; width, 40 inches, and height, 50 inches. The vehicle, which is especially recommended to merchants for light, quick work, is fitted with a single-cylinder 9-horsepower gasoline motor disposed longitudinally under the body and cooled by water. Transmission is through a two-speed planetary gear by chain to the differential, and the sprocket combination gives a maximum speed of about eighteen miles an hour. The weight is approximately 1,400 pounds. Pneumatic tires 3 1-2 inches in diameter are fitted to the 30-inch wheels. The selling price is $950.

One of these delivery wagons which was placed in service by W. W. Snyder & Co., of Newark, last July, had been driven more than 6,000 miles up to the beginning of last December, at a total cost for gasoline and oil of only $190. The saving in expense over a horse-drawn wagon during the period of five and a half months, is said to have been $567.84.

Rambler Convertible Delivery Wagon.

A machine designed to be used during business hours for light delivery purposes and then converted by a few minutes' work into a pleasure vehicle to be used as a two-passenger runabout or a four-passenger touring car, is manufactured by Thomas B. Jeffery & Company, of Kenosha, Wis., and is illustrated on page 155. Fitted with covered body, as shown, this vehicle will hold nearly two cubic yards or carry a dead load of 500 pounds. It is geared as desired by the purchaser, to suit level country or hilly sections and bad roads. The body is removable along the diagonal moulding on the rear panel, leaving the front seat so that the machine can be used as a runabout. At a cost of $100 in addition to the regular list price, a tonneau can be supplied, giving the purchaser the choice of three models in one—a combination that appeals especially to many tradesmen in small cities and villages.

The car is driven by a single cylinder 7-horsepower explosion engine placed longitudinally under the middle of the body. An angle steel frame which supports the power plant and body is carried upon four full elliptic springs. Extra heavy tubular axles adjustable to wear are used and the 28-inch wood artillery wheels are fitted with 3-inch detachable tires. As natural or thermo-syphonic circulation is relied upon to cool the cylinders, there are no pump or fan complications. A centrifugal governor automatically times the ignition; in fact, the vehicle is especially designed and built to be as simple as possible in operation in order that skilled operators will not have to be employed. The planetary transmission furnishes two forward speeds and reverse, and there are emergency brakes on the rear wheels in addition to the regular transmission brake. The list price of this vehicle is $850, complete with two oil side lamps, a brass horn, tools, oilers, pump and repair kit.

Thomas B. Jeffery & Company are prepared, at some delay, to supply a delivery body constructed after the same general style as the one illustrated and having the convertible feature, to be fitted to the Rambler 18-horsepower chassis. This machine has a 90-inch wheelbase, pressed steel frame, full elliptic springs, two 5 by 6 inch opposed cylinders, and transmission, cooling and sparking system similar to the small car. The wheels are thirty inches in diameter and are fitted with 3 1-2-inch detachable tires. The list price of this vehicle is $1,250.

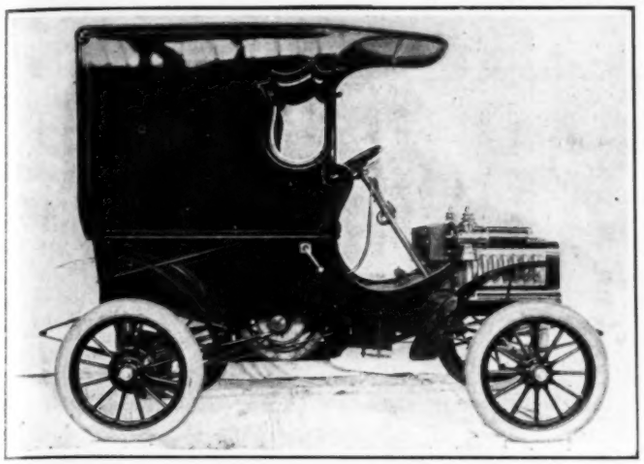
Olds Heavy Delivery Wagon.

This vehicle, shown in the engraving fitted with permanent top, wire cage sides and storm curtains, handles a load of 2,000 pounds, and is suitable for medium-weight work, such as express service, wholesale merchandise transfer, hardware haulage and similar work. It is especially designed for regular and long continued service, and, since the momentum of a car carrying a heavy load is so great that there would be danger in running at high speed, the maximum speed is fixed at sixteen miles an hour. The power plant is a two-cylinder vertical engine, developing 16 horsepower, which is sufficient for all grades and for heavy going. The frame is of pressed steel, the transmission of the planetary type and the drive by side chains. The running gear is provided with transmission and internal hub brakes. Pneumatic tires 30 by 4 1-4 inches are fitted; the gasoline tank holds eleven gallons and the water tank capacity is ten gallons. The carrying space measures 66 inches long, 58 inches wide and 43 inches high, giving a cubic capacity of 87 feet. Bodies can be furnished to suit the customer—screen or panel sides, open express or light truck platform. The selling price, with standard body, is $2,000.

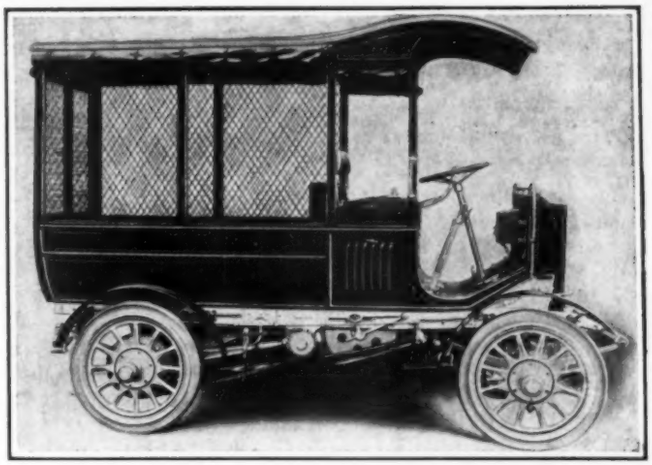
Besides this type of commercial car, the Olds Motor Works, of Lansing, Mich., manufacture a light covered delivery wagon of 10-horsepower to sell for $1,000, and a

Record of Trip of Knox Truck in Company with Glidden Tourists.

	Start		Finish		Net running time	Miles travelled	Gasoline used, gallons	Oil used, gallons
New York	3:15	A.M.	Hartford	4:15 P.M.	7:31	122 3-8	14 1-2	1-2
Hartford	6:00	"	Boston	3:15 "	7:05	123	12	1-2
Boston	6:40	"	Portsmouth	11:40 A.M.	4:25	77	8	1-4
Portsmouth	6:00	"	Bretton Woods	5:20 P.M.	9:20	120	15	5-8
Bretton Woods	6:08	"	Concord	7:15 "	10:00	112	15	1-2
Concord	6:02	"	Worcester	3:10 "	7:30	104 1-8	10	3-8
Worcester	6:12	"	Lenox	3:15 "	7:45	115	10	1-2
Lenox	7:00	"	New York	9:30 "	11:00	151	16	3-4



RAMBLER PLEASURE CHASSIS WITH DELIVERY BODY.



OLDS GASOLINE HEAVY DELIVERY WAGON.

ten-passenger canopy top coach for omnibus and stagecoach work, to sell for $2,200.

Knox Air-Cooled Wagons.

The most varied line of gasoline commercial vehicles in the market is that produced by the Knox Automobile Company, of Springfield, Mass., which has been making a specialty of delivery wagons and trucks for all sorts of uses for several years with unusual success. A large number of its vehicles are in regular use by business houses in Boston, New York and other Eastern cities, including hilly Pittsburg, and its passenger stages are being used on regular lines in Porto Rico and Cuba. One of its most popular selling lines at the present time is a combination or convertible pleasure and business car of the latest type, similar to the four-seat machine shown in one of the illustrations on page 159. The cross seats are easily removed and a set of sides fitted onto the low rail that the sides rest upon, making a fully equipped business car in about two minutes. Three different styles of tops are made for this vehicle, all of which are removable.

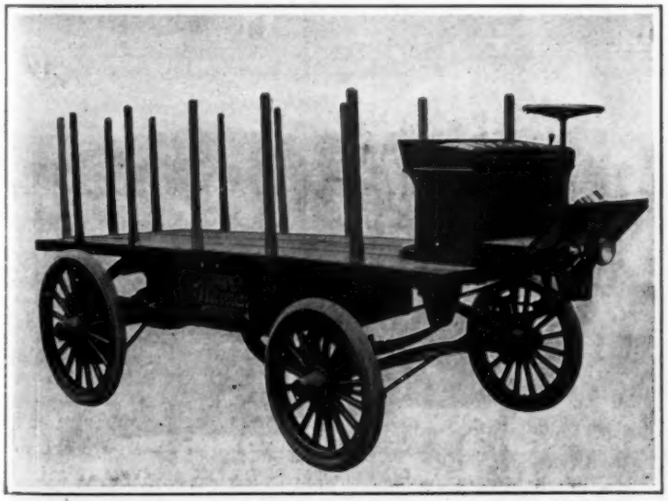
Two sizes of chassis are built for work of different kinds, one, for light work, having a single-cylinder, air-cooled engine of five inches bore and eight inches stroke, and the other, for heavy work, having a double-opposed engine of the same type, with five by six or five by seven inch cylinders. The construction of both types is much the same, the engine being disposed longitudinally under the middle of the body and the power plant and body carried upon long side springs connecting the front and rear axles and taking the place of the usual elliptic or semi-elleptic springs. Planetary gearing gives two forward speeds and reverse, and drive is by single chain to the differential in the middle of the rear axle. Left side control is adhered to, with lever steering made irreversible by Lemp hydraulic check.

Capacity and speed of the single-cylinder cars varies with the style of body and the nature of work to be done, the capacity ranging from 600 to 1,500 pounds and the speed from fifteen to twenty miles an hour. Tires are either solid or pneumatic, according to the purposes for which the vehicle is sold and the desires of the purchaser.

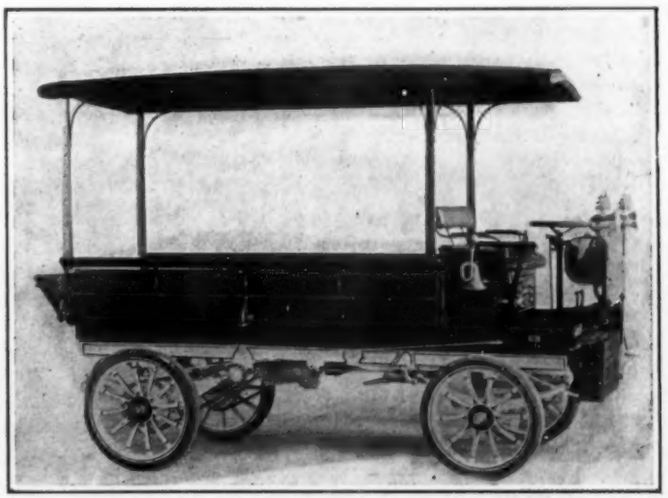
The load-carrying ability of the two-cylinder vehicle is 2,500 pounds, and the maximum speed eighteen miles an hour. The two-cylinder passenger buses will accommodate twelve to fourteen persons. Almost any style of body desired can be furnished, from light covered delivery wagon to police patrol, ambulance, express, side-seat passenger and open stake truck types. Prices vary from $1,600 to $2,900.

Premier Express Wagon.

A concern that until very recently has devoted its energies to the manufacture of pleasure cars, but has recently brought out a light truck and installed facilities for manufacturing this type of vehicle on a large scale, is the Premier Motor Manufacturing Co., of Indianapolis, Ind. The Premier light truck, which has a carrying capacity of 1,500 pounds, is equipped with the regular Premier vertical four-cylinder air-cooled motor, set transversely across the front of the car under an open-fronted bonnet. The motor is rated at 16 horsepower, and the gearing is so calculated as to give the car sufficient speed for its work, together with plenty of power for hills and bad roads. The air-cooled feature is considered a great point in favor of this car, as it eliminates all water circulation troubles and does away with the possibility of freezing up in cold weather. The axles



WAVERLEY 1,500-POUND TRUCK WITH UNDERSLUNG BATTERY.



PACKARD TRUCK WITH 2-CYLINDER VERTICAL MOTOR

are heavy; the wheels are of the artillery type, 32 inches in diameter, with 3 1-2-inch solid rubber tires. Wheelbase is 118 inches. Driving chains and sprockets are heavy, to enable them to withstand the strain of heavy commercial work. The minimum speed is about two miles an hour, while the maximum is about eighteen miles an hour—more than sufficient for the work such a vehicle is required to do. The load-carrying portion of the body is 72 inches long, 42 inches wide and 10 inches deep; flaring sides increase this depth by 5 inches.

The Premier company states that its first delivery wagon, which was built more than a year ago, is still in hard and constant service and is giving satisfaction to its owner. The Premier delivery wagon lists at $1,400.

Packard Two-Ton Truck.

An example of the latest development in business vehicles is the Packard gasoline truck, designed and built throughout for the work it is to do, but employing the same mechanical features and embodying the same engineering principles that are incorporated in the touring car made by the Packard Motor Car Company, of Detroit. The power plant consists of a two-cylinder vertical motor disposed under the seat at the front and driving through a universal-jointed shaft and sliding gears to a countershaft, whence the drive is by side chains to the rear wheels. The sliding gears give three forward speeds of three, eight and twelve miles an hour, and one reverse at three miles. There are double and triple ball bearings throughout. The front axle is of extra heavy weldless steel tubing, and the rear axle of solid two-inch square forged steel. The wheels run on roller bearings. Water cooling, ignition, carburetion and control systems are similar to those of the pleasure car. An armored wood frame, supporting the power plant and body, is carried on semi-elliptic springs in front and on platform springs at the rear. For holding heavy loads back on steep hills, there are, in addition to foot operated brakes clamping on the outside of the rear wheel drums, emergency brakes expanding inside the drums and controlled by hand lever. Solid tires of 3 1-2-inch size are fitted to the 32 and 34-inch wheels. The wheelbase is 94 inches and the tread 58 inches.

Owing to the great diversity in styles of bodies demanded, the chassis is sold separately, the price being $2,500, f. o. b. Detroit, complete with driver's seat, dashboard, tires and lamps, ready to run. Bodies are sold separately, the prices running from $100 for the plain platform type, up to $300 for enclosed bodies, and as high as $1,100 for full omnibus bodies.

Some of the work that the Packard truck has been doing is reviewed in the introductory to this article.

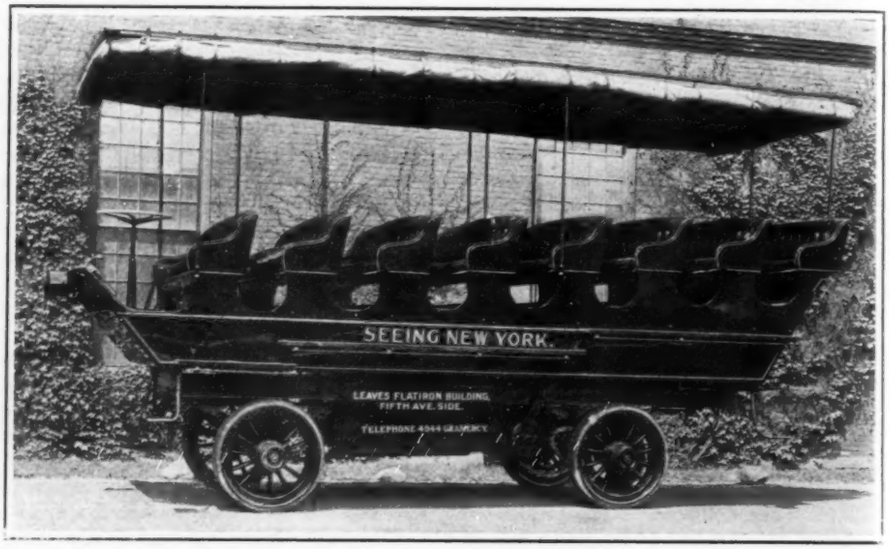
Waverley Electric Vehicles.

One of the earliest builders of electric delivery wagons in this country was the Waverley factory in Indianapolis, now operated by the Pope Motor Car Company. The company has stuck persistently to the manufacture of these in addition to its line of electric pleasure vehicles and has added new and larger models of business vehicles, all of the electric type. These are produced in a number of styles and sizes for different kinds of work. A popular model is the closed delivery wagon with a carrying capacity of 500 to 800 pounds, which is especially suitable for use by shoe stores, druggists, caterers, laundries and florists. It has a reachless running gear, carrying the body, to which is attached the underslung battery, on four full elliptic springs and having its artillery type wood wheels shod with pneumatic tires. Its power plant consists of two electric motors of 3-horsepower each and a battery of forty Exide or National cells. The body carrying space is four feet three inches long, two feet ten inches wide and four feet two inches high. The list price, complete, with top, is $1,400. The same chassis can be furnished fitted with an open delivery wagon body for use by grocers and butchers.

A very serviceable vehicle for transferring boxes of drygoods, barrels of china and earthenware, gas ranges and similar bulky stuff is the 1,500-pound stake truck illustrated on page 155. It has an overall length of fifteen feet and a width of seven feet two inches, with a floor space measuring eleven feet four inches by four feet three inches. The wheel tread is seventy inches. Two Westinghouse motors are hung from the body in front of the rear axle and drive to the rear wheels by chains. A Westinghouse controller is fitted and steering is by irreversible hand wheel, as in all the Waverley commercial vehicles. The underslung battery contains forty-two medium size National or Exide cells. An expanding brake operates on each rear hub. Front wheels are 36 inches in diameter and rear wheels 42, all fitted with 3-inch solid tires. List price, $2,000.

An ambulance and police patrol is one of the models made in the medium-weight vehicles. It seats ten persons inside and two on the front seat, is equipped with steps and hand rails at the rear and has a glass front and storm curtains in front. The price is $2,750.

Four and five-ton trucks with immense bodies, to be used for hauling beer barrels, heavy general merchandise and similar articles, are recent additions to the Pope-Waverley line. The general merchandise truck has an overall length of twenty feet two inches and a width of eight feet two inches. The platform is eighteen feet long by six feet four inches wide. Two Westinghouse motors drive direct to the rear wheels by short side chains. The 36-inch wood wheels are fitted with 5-inch solid tires in front and 6-inch solid tires at the rear. A permanent canopy top is fitted and has side curtains to be let down in case of storm. List price, $3,750.



COLUMBIA 48-PASSENGER ELECTRIC SIGHTSEEING VEHICLE.

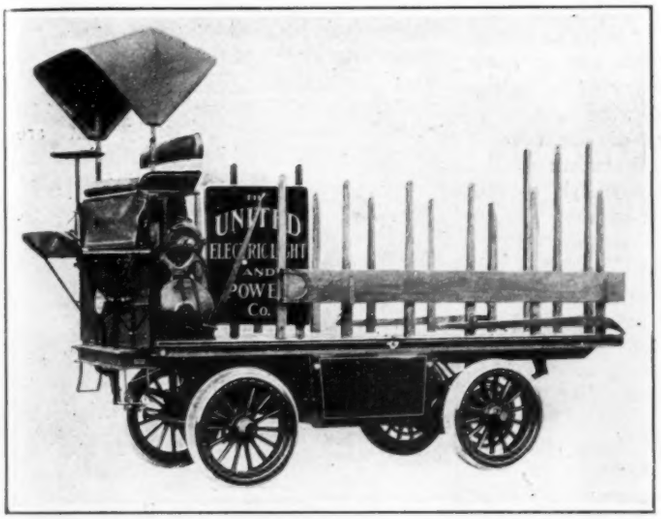
Lansden Electric Wagons.

Bodies in endless variety for different kinds of work can be fitted to the chassis marketed by the Lansden Company, of Newark, N. J., which has devoted several years of study and experimenting to the production of a single chassis type. The chassis is complete in itself so far as operation is concerned, and the easy removal of the body, complete or only in part, permits a thorough inspection of machinery and running gear.

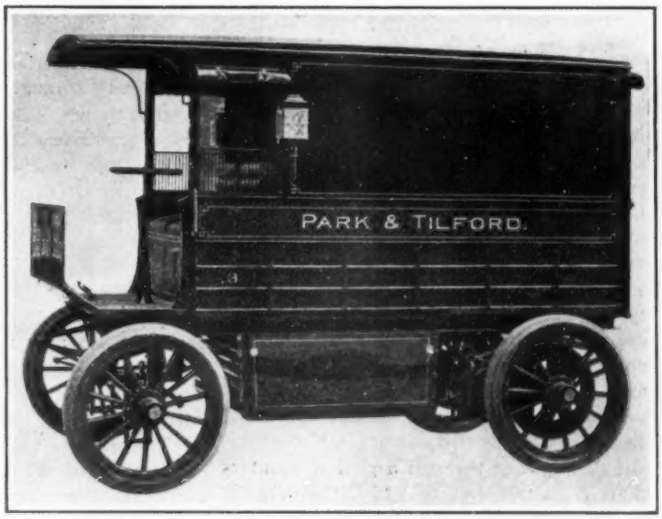
The vehicle is of the electric type, driven by a single motor swung on the frame directly over the front axle. The motor and the controller, which gives three speeds forward and two reverse, are built especially for commercial work. The motor drives by single chain to a cross differential countershaft, and the countershaft by two chains to the rear wheels.

KNOX DELIVERY WAGON WITH AIR-COOLED MOTOR.

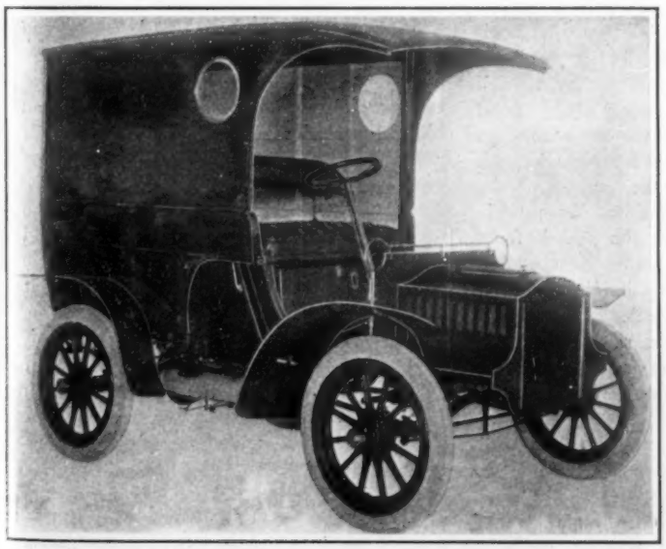
LANSDEN CHAIN-DRIVEN ELECTRIC EXPRESS WAGON.



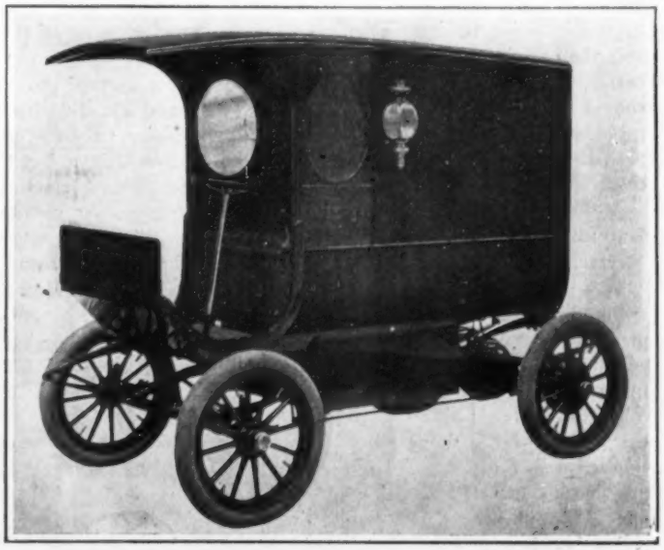
V. E. CO.'S ELECTRIC STAKE TRUCK WITH HOISTING WINDLASS.



V. E. CO.'S TWO-TON ELECTRIC DELIVERY WAGON.



CADILLAC 9-H. P. GASOLINE LIGHT DELIVERY WAGON.



WAVERLEY CLOSED BODY ELECTRIC DELIVERY WAGON.

The battery box is hung under the bed of the wagon, suspended from the armored wood frame, where it is entirely out of the way and does not reduce the carrying capacity of the body. The entire weight of the power equipment is carried, together with the frame and body, on four long, semi-elleptic springs clipped to solid axles. The Lansden line of standard wagons includes the open top express wagon, illustrated on page 157, the closed panel merchandise wagon, and the overhung platform type of vehicle. The mileage capacity ranges from twenty-five to thirty-five miles on one charge of the battery, and the weight of the complete vehicle is from 2,800 to 3,300 pounds depending on the capacity of the battery and the style of body necessary.

The open express type of Lansden vehicle, like the one illustrated, sells for $1,850, with lead batteries, or $2,000 with Edison batteries. The closed panel type is listed at $1,950 and $2,100, respectively, all f. o. b. Newark.

Studebaker Electric Trucks.

Electric delivery wagons, with panel sides, made in two sizes of 1,000 pounds and 2,500 pounds capacity, and stake trucks of 3 1-2 and 5-ton capacity, are regularly catalogued by the Studebaker Automobile Company, of South Bend, Ind., in addition to its line of electric and gasoline pleasure vehicles. Novel features of the delivery wagons and trucks, which have a standard type of chassis built in different sizes, are the suspension of the motors from the angle steel side frames behind the rear axle and the inverted truss method of suspending the battery under the body. Each chassis has two motors, which transmit their power through a geared countershaft from the ends of which the drive is by short chains to sprockets on the drive wheels. The battery is carried under the body in an angle steel frame trussed to the side frames. A distinctive Studebaker feature is the division of the battery into four trays containing ten cells each. This obviates the expense of keeping an entire extra battery on hand, as one extra battery tray should be all that is necessary for two or three wagons, since a single tray can be used to replace any one tray removed from the wagon for cleaning or repairs.

A controller at the left of the driver's seat gives four speeds forward and four reverse.

Steering is by hand wheel through pinion and segmental spur gear. Two independent sets of brakes form part of the equipment of every wagon, one operating on the motor countershafts and the other expanding inside of drums bolted to the spokes of the drive wheels. Lubrication of the motors follows the standard practice in street railroad motors, being effected by absorbent pads, while the axles and other bearings are lubricated in the same simple way as on horse-drawn vehicles of similar type.

The piano delivery wagon, shown on page 159, which is the same except as to body as the Studebaker open express wagon, has a weight carrying capacity of 2,500 pounds, will travel thirty miles on one charge of the battery and has a range of speed of from three to nine miles an hour. Overall length is 168 inches and width 73 inches. The weight of the vehicle complete is approximately 5,400 pounds. Solid rubber tires, 36 by 3 1-2 inches, are fitted.

Prices are quoted as follows: Delivery wagon with a panel side, capacity 1,000 pounds, $2,200; delivery wagon, panel sides, capacity 2,500 pounds, $2,600; 3 1-2-ton truck, stake side body, $3,500; 5-ton truck, stake side body, $4,250. A piano wagon like the one illustrated sells for $2,600.

Columbia Electric Business Vehicles.

A regular and very important part of the business of the Electric Vehicle Company, of Hartford, Conn., is the building of electric vehicles in a number of sizes and fitted with a variety of styles of bodies. After an experience in this line of work extending through a number of years, the company has established what it believes is a permanent standard of construction. Its chassis is entirely independent of the body, which may be of any style to suit the requirements of the purchaser. It includes the complete running gear, battery, controlling apparatus, seat platform and all electric wiring. Five sizes of this chassis are built, to carry loads of 1,000, 2,000 6,000, 8,000 and 10,000 pounds and to be fitted with bodies ranging from the light, closed delivery body to the heavy, open truck body.

The electric motors are hung from the I beam steel frames in front of the rear axle and drive to the rear wheels by short chains. The battery box is also suspended from the frame, so that all locomotive parts have the benefit of the cushioning effect of the body spring suspension. Irreversible hand wheel steering is provided, and in some of the vehicles the usual horizontal side lever controller is replaced by a vertical controller operated by a small hand wheel under the steering wheel. Solid rubber tires are part of the equipment on all models, a fact that has much to do with economical running of the wagons. The mileage per charge of the smaller models is thirty-five miles, and the speed from eleven to thirteen miles an hour, according to type. The two and a half to five-ton trucks have a maximum mileage of twenty-five and thirty-five miles, respectively, on one charge of the battery and maximum speeds of six, eight and eleven miles an hour.

Columbia commercial vehicles are well known through their extensive use in the large cities of the country, notably in New York, where R. H. Macy & Company have fifteen covered delivery wagons of this make, and the city hospitals employ several electric ambulances, and in Buffalo, where the Adams Express Company operates twelve Columbia express wagons, which ran steadily through the heavy snow storms of the hard winter of 1903-4. There is a wide range in prices for the different models. The one-ton delivery and express wagons sell for $2,500, and the five-ton open brewery truck for $4,000.

Two special styles of Columbia vehicle are illustrated, one an open truck of 6,000 pounds capacity, especially provided with an electric windlass for rolling heavy reels of telephone cable onto its own platform and for pulling such cable through conduits under the surface of streets in the city. This truck, which has a speed of eight miles and a radius of thirty miles on one charge, has double reduction gear, and chain drive from two motors, and is provided with an emergency switch and duplex brakes. Its price is $3,700, without windlass.

The other vehicle is a special new type that is coming rapidly into demand for sight-seeing purposes in large cities. A dozen huge brakes of this type are in use in New York alone. The Columbia sight-seeing car seats forty-eight persons, six on each of the eight seats. The seats are elevated progressively from the front to enable those at the rear to see forward over the heads of the other passengers. The maximum speed is eight miles an hour and the range of action on one charge of the battery twenty-five miles. The wheel-base is 123 inches. The 36-inch wheels are fitted with 7-inch Firestone solid sidewire tires. The power plant and control are similar to those of the truck previously described. Entrance to the seats is by steps carried in the car. The price of the vehicle is $4,800.

Logan Trucks and Buses.

An open bed 1,700-pound truck, driven by a 20-horsepower double opposed cylinder engine is a regular model of the line of gasoline cars built by the Logan Construction Company, of Chillicothe, O. The engine and transmission are the same as in the Logan touring car, except that the truck is geared to from twelve to fifteen miles an hour on high speed. The truck, however, is built much heavier than the touring car and is guaranteed to carry a load of 2,000 pounds. Although built along the same lines as the touring car, the machinery is so mounted that no working part protrudes above the frame, so that a body with a perfectly flat floor can be fitted. Any style of body can be supplied at the regular price, for the complete vehicle, of $1,600, unless the cost of construction of a special body is greater than for the standard body. The regular equipment is solid tires, but pneumatics will be put on if desired. The transmission is of the sliding gear type, furnishing two forward speeds and driving direct on the high. A contracting band clutch is used, and drive is by single chain to the differential.

A ten-passenger omnibus or stage with

LOGAN TEN-PASSENGER GASOLINE STAGE ON COMMERCIAL CHASSIS.

KNOX CONVERTIBLE STAGE WITH AIR-COOLED MOTOR.

similar chassis was recently completed and is in operation between Chillicothe and Bainbridge, a distance of nineteen miles. It makes two trips a day and is usually filled. There are two 10 per cent. grades of considerable length which the stage takes on high gear with full load, making the nineteen-mile trip in one hour thirty minutes on its regular schedule. The Auto Rapid Transit Company, which operates this bus, has placed an order for thirty similar machines to be used in different sections of the country where it is establishing stage lines.

PREMIER OPEN EXPRESS WAGON WITH VERTICAL AIR-COOLED GASOLINE MOTOR.

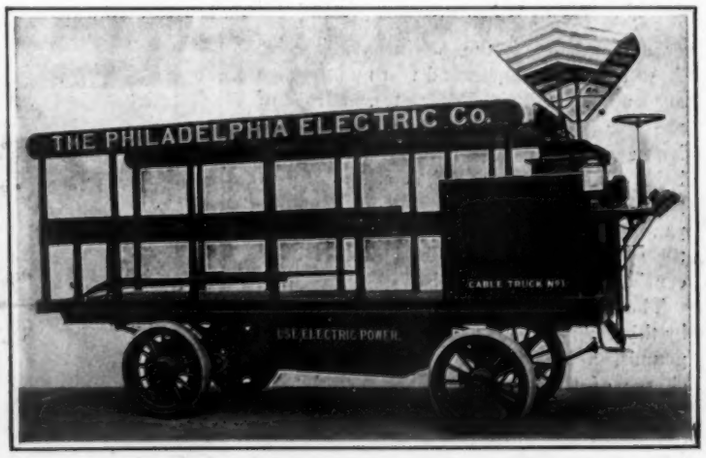
Casaday Gasoline Engine Trucks.

Among the latest concerns to make their advent into the field of heavy truck manufacture is the W. L. Casaday Manufacturing Company, of South Bend, Ind. Two sizes of standard chassis are built by this concern, the smaller for loads up to three tons and the larger for loads up to five tons. These chassis are adapted to take any style of body desired, the regular styles furnished being police patrols, with and without top, fire hosecarts, eighteen-passenger brakes, and depot busses, and United States mail wagons, all suited for the small size chassis. Brewery trucks and any style of express or truck bodies are built to order.

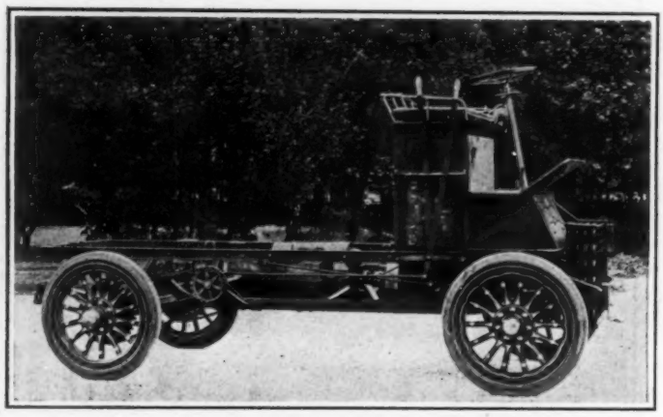
The power plant of the chassis consists of a four-cylinder vertical water cooled engine of 35 to 40 horsepower, with a speed variance of from 150 to 1,500 revolutions per minute. Valves are mechanically operated and the engine is provided with an auxiliary camshaft to aid in starting the engine and to insure very low speed for the engine when standing. Sliding gear transmission giving three forward speeds is regularly fitted, but if desired either individual clutch or friction drive will be substituted for it. Ignition is by magneto generator and circulation is forced by positive geared pump through extra large spiral fin radiator. Drive is by side chain from differential countershaft, and the rear wheels are fitted with double-acting brakes.

The total weight of the small chassis is 3,800 pounds; wheelbase, 108 inches; tread, 60 inches. The chassis alone is quoted at $3,000; large size, $3,500. Bodies of different types for the small running gear range from $400 to $600.

STUDEBAKER 2,500-POUND ELECTRIC PIANO TRUCK.



COLUMBIA ELECTRIC CABLE TRUCK WITH WINDLASS.



CASADAY GASOLINE TRUCK WITH 4-CYLINDER MOTOR.

AMERICAN COULTHARD HEAVY STEAM TRUCK.

One of the small trucks is doing regular freight duty in South Bend, and in two hours does the work that a heavy team has been taking nine hours to do. A run of twenty-four miles, to Hudson Lake, Ind., was recently made with it in one hour five minutes on a consumption of one pint of lubricating oil and three gallons of stove gasoline.

Vehicle Equipment Co. Electric Trucks.

Heavy commercial vehicles for many unusual purposes have been built by the Vehicle Equipment Company, of New York, for use by business houses in the city of New York. Among these may be mentioned brewery trucks, tilting coal wagons, safe hoisting trucks, telephone cable hauling trucks, trunk delivery wagons with bodies built in imitation of a trunk, ambulances, and so on. A large number of V. E. electric delivery wagons and two, three, and four-ton trucks are also in use in the metropolis.

The distinguishing feature of this make is the "pedestal" axle guide, a cast steel bracket bolted to the I-beam side frames on each side above each axle and having a rectangular slot in which the axle has free movement up and down under the action of the springs, but has no longitudinal nor lateral play. This relieves the springs of all undesirable driving and twisting stresses, so that they have only to support their load vertically. The batteries are carried in a cradle underneath the platform, supported from the side frames; and two motors, also suspended from the side frames, in front of the rear axle, drive the rear wheels by pinions engaging with spur gears bolted to the hubs. Irreversible wheel steering through pinion and segment is used, and ample expanding brakes act in large drums within the spur gears. Any desired sort of body can be fitted to the chassis.

The Park & Tilford delivery wagon, built by this company, has a load capacity of 2,000 pounds, a mileage of thirty-five on one charge of the battery, and is geared to a maximum of ten miles an hour. The electric hoist truck will carry 4,000 pounds thirty miles on one charge at a maximum rate of eight miles an hour.

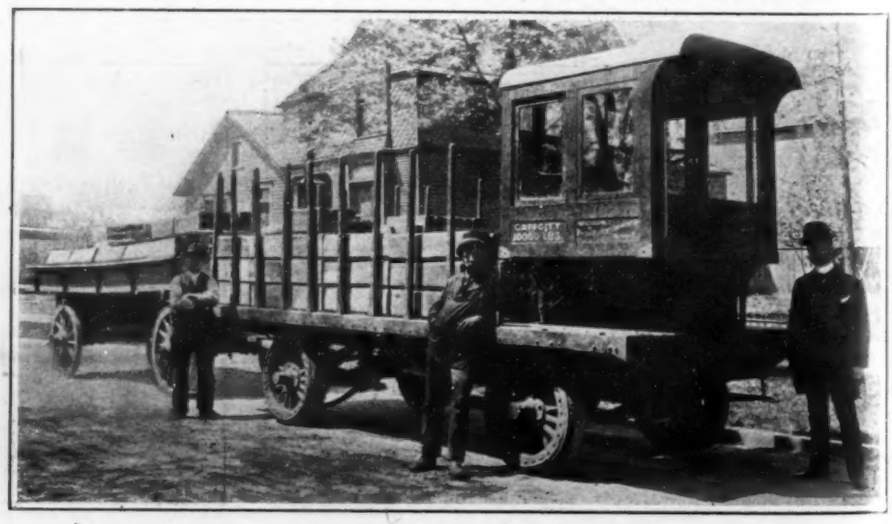
Special arrangements are made by the manufacturers' selling agents with their New York customers to store and care for the vehicles and recharge and keep the batteries in repair for a stipulated price per year, a feature that relieves the purchaser not only of all annoyance in connection with this work, but also of uncertainty as to the expense of operation and maintenance.

Whiting Convertible Gasoline Trucks.

Convertible trucks that may be used as passenger, observation or sight-seeing brakes in summer and for transferring heavy freight in winter, are built by the Chicago Commercial Auto Manufacturing Company, of Harvey, Ill. One of the company's five-ton trucks is shown on this page, carrying a load of tiling and hauling a trailer similarly loaded for the Chicago Telephone Company. A record of the work done by this truck kept for the forty-one days ending June 5 last, shows an average daily mileage of slightly more than twenty-three miles, with an average of 2 1-4 loads per day. The total weight carried averaged 24,893 pounds per day, and the average total elapsed time in service, which included loading and unloading, and time spent idly during meal hours, was slightly more than ten hours. Its heaviest day's work was on May 3, when it traveled fifty-four miles, carrying three loads aggregating 35,425 pounds, in nineteen hours elapsed time.

Chassis are built in a number of sizes—delivery wagons of 2,500 pounds capacity, and two, three and five-ton trucks, and observation cars to carry twelve, twenty-four and thirty-six passengers. All are fitted with four-cylinder gasoline engines disposed vertically over the front axle and under the driver's seat. The engines are of two sizes—4 3-4 by 4 1-2-inch, developing 24 horsepower in the smaller vehicles, and 6 by 6 inch, developing 40 horsepower at 800 revolutions per minute in the larger sizes of trucks and observation cars. All are fitted with solid rubber tires. Maximum speed of the five-ton truck and twelve-passenger cars is twelve miles an hour; of the three-ton truck, fifteen miles an hour; of the two-ton truck and thirty-six passenger car, fifteen to twenty miles an hour. Change-speed is by sliding gears and transmission by side chains.

A cab with glass windows in front and sides is built on the heavy trucks for the protection of the operator in winter weather.



WHITING CONVERTIBLE GASOLINE TRUCK, WITH LOADED TRAILER BEHIND.

If preferred, the cab will be omitted and a winch, operated by the gasoline engine, fitted. Coal trucks of six tons capacity and with either rear or side delivery are among the models also listed by the manufacturers, the prices being $4,150 and $4,200 respectively. The open platform five-ton trucks have an over-all length of 18 feet 3 inches and a width of 6 feet 10 inches, and list at $4,000.

American Coulthard Steam Truck.

One of the very few steam trucks in the American market is the Coulthard, a heavy freight vehicle that has been manufactured and used with much success for a number of years in England and for the manufacture of which the American Coulthard Company, of Boston, possesses the American rights under the English patents. One of the first of these heavy machines made in America is illustrated on page 160 loaded with a number of angle steel frames.

Steam is generated in a multi-tubular vertical boiler located directly behind the front axle and carried between the channel steel side frames. Coke or coal is fed from above through a central tube, the fuel bunker, having a capacity of twenty cubic feet, being directly in front of the driver and extending across the front of the cab, so that the driver can fire up without leaving his seat. The boiler is constructed for a working pressure of 200 pounds to the inch and is of steel, with the exception of the tubes, which are of drawn copper. The upper half of the shell can be removed readily for inspection and cleaning. The grate area is four square feet and the heating surface 106.8 square feet, giving a large reserve power capable of meeting the varying demands of the engine and obviating the need of change-speed gearing. An automatic feed water pump is worked off the end of the second motion shaft by means of an eccentric and is so constructed that the plunger is not exposed to grit and dirt.

A cross compound engine fitted with link reversing gear develops 30 horsepower at the normal speed of 550 revolutions per minute. The cylinders are 4 by 7 inches and the pistons have a 6-inch stroke. A distinguishing feature of the engine is the fact that only one cover is used for both cylinders and piston valves, and is arranged to serve as the receiver while supporting the multiplier used to temporarily increase the power of the engine by admitting live steam to the low pressure cylinder.

A system of pinions and gears gives two ratios of gearing—10 to 1 and 20 to 1—between the engine and road wheels. The average speed is six to eight miles an hour with six-ton load. All of the gearing runs in a bath of oil, the compensating gear shaft, which is the only part that projects beyond the casing, carrying a driving pinion at each end. Silent driving chains are used and run over chain rings attached to the drive wheel rims, so that no driving strain comes on the spokes. Steering is by worm and wheel. A powerful screw-down brake, in front of the driver's seat, operates double brake blocks which act on each side of the rear wheels. A water tank at the rear carries enough water for a run of fifteen miles with full load, and a steam water lifter and hose enables the tank to be refilled in a few minutes from any convenient source. No visible vapor or smoke is emitted. Steel or wood tires are fitted to the gun-carriage pattern wheels. Body or platform is built to suit the purchaser. The list price of the standard truck is $4,000.

Friction Drive Gasoline Truck.

Among the comparatively new companies that are making a specialty of building large commercial vehicles is the American Motor Truck Company, of Toledo, which last spring brought out a new truck that proved very satisfactory in the trials that were made with it. This truck has an open platform body with a cab in front. The vehicle has a capacity of from five to six tons and a maximum speed of eight miles an hour. It is driven by a water-cooled gasoline engine, located under the cab, and transmission is of the friction drive type, but differs from the old style friction-disk pattern. Full details regarding mechanical features are not yet at hand.

Notes on the Use of Commercial Cars.

By HENRI G. CHATAIN.

THE early attempts in this country to produce a commercial vehicle, some six or seven years ago, all met temporary failure, due to a variety of reasons. It was primarily a case of trying to walk before knowing how to creep. The five-ton steam wagon was first exploited, presumably because the English and French had experimented with this type of vehicle with considerable success. Little attention was paid to the difference in conditions existing there and here—one demanding suburban work over the finest kind of highway, and strictly so maintained; the other for use in our large cities over the worst assortment of pavements imaginable and rarely maintained. After a large expenditure of money and many painstaking trials with the materials then at hand, experience taught that the five-ton steam trucks were not then practicable. The commercial motor vehicle was then practically at a standstill until the advent of the five-ton electric, which by its neat and clean appearance and extreme simplicity of control, was sought after immediately, and has been in service constantly since its first appearance, with success as a widely varying quantity, depending principally upon the care it gets. However, for many lines of work it will be extremely difficult to produce something better.

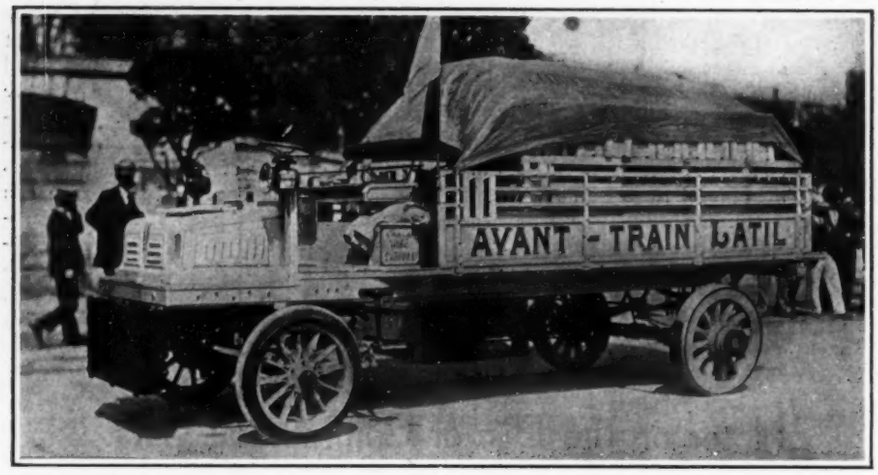
The refinement and general improvement of the gasoline automobile have no doubt had much to do with the present inclination to build commercial automobiles of this motive power, and for the past year they have been built in increasing quantities. These automobiles are usually constructed to carry loads of approximately 500 pounds to two tons. Many concerns have these cars in use in numbers of one to a dozen vehicles, and are apparently passing the word along, as new users are appearing continually. Their confidence in this new mode of conveyance must be great, as they are only in the experimental stage, and data as to their cost of operation and upkeep is still uncertain.

Great credit must be given to these pioneer users, as they are doing a tremendous work in bringing about and perfecting the commercial automobile. They will receive their recompense, however, in increased knowledge which will prove valuable in the future operation of their cars. One advantage that the pioneer user is enjoying is the advertising obtained by the use of the up-to-date method of transportation. This condition will, of course, gradually disappear, but to-day a neat looking car with appropriately garbed driver is certainly looked at with the thought running through one's mind that the concern in whose use the vehicle is must be progressive. The writer knows of two concerns which were practically forced to utilize motor cars, as several of their customers demanded it, stating that they were a benefit to their trade.

It is yet rather early to ascertain what effect the truck drivers' union will have upon operators of these cars. At present, many belong and many do not, but it is reasonable to assume that eventually they will form a union of their own which will be conducted along lines beneficial to themselves and their employers, as they must all be high-grade, intelligent men.

No opposition so far has made itself manifest to the new method of transportation. It is extremely gratifying to note that several large concerns in New York and vicinity have entirely done away with horses, and many to a large extent. One concern in particular states that under no circumstances would they return to horses, the work being done cheaper and better by the motor car. Many are very well pleased, the majority are fairly so, and a few are dissatisfied. It may well be said concerning the latter that the care and operation of their cars has been in the hands of some person who has charge of the horses or the "chief" engineer of the establishment—neither ever having had to do with a motor car before they derive their experience at the expense of the firm employing them.

The very fact that the majority of motor cars once put in service are kept in service is sufficient evidence that they are an economic success—one car usually displacing



LATIL GASOLINE TRUCK IN FRENCH TRIALS WEIGHING WITH LOAD ABOUT FIVE TONS.

from four to six horses, and at least one-half the number of drivers. Another great point in their favor is the fact that they require much less space for their housing as compared to horse service. Where a number of cars are employed, this amounts to an enormous sum, in one instance the difference in cost of a proposed building amounting to the outlay required to purchase the entire number of cars.

The most advantageous conditions for the operation of commercial vehicles is where the hauls are long and stops few; this permits of taking advantage of the greater speed of the motor car, which is its strong point, and it is usually upon such a route that the car is first placed by a concern entering upon the new method of transportation. This long haul delivery is especially advantageous, as it usually saves a couple of handlings by an express company, with attendant delays and breakages.

In justice to the automobile, it must be said that many are operated at a great disadvantage. One delivery car is generally purchased to give the new system a trial, and is promptly put in the stable under the care of the superintendent, and a driver from one of the horse rigs is promoted to its operation, after being "broken in" by a man sent by the manufacturer. It seems useless to say that such a combination will rarely prove effective and economical. The motor car is blamed, as usually it is put out of commission in a short time and probably laid up for a few days till competent help arrives.

A person to properly take charge of a motor car cannot be educated in a week or so, and it is costly to get experience in this way. To successfully keep cars in operation it is necessary to have a reasonable equipment in the way of a machine shop, where inspections may be made and repairs effected promptly, so that they do not increase in magnitude unnecessarily.

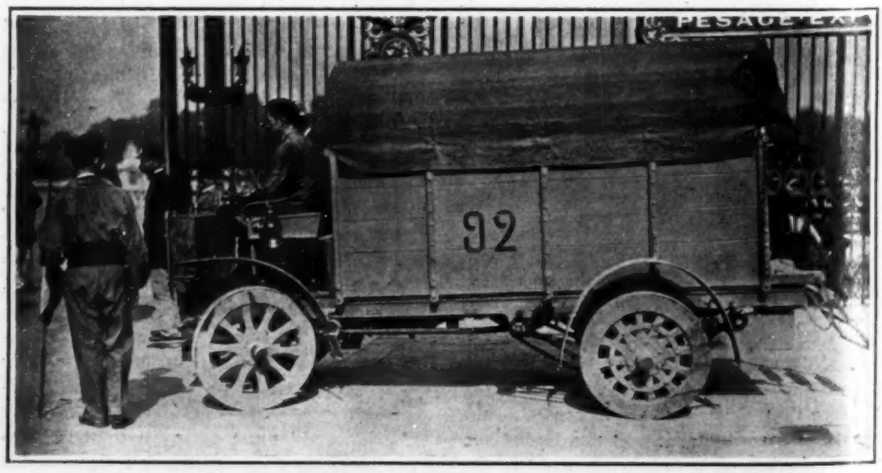
Where several cars are employed, one car should always be kept in reserve to insure the regular delivery and take care of any emergency that may arrive in the way of extra rush business. A detailed account should be kept of all that transpires in regard to the cars, as such records are extremely valuable to determine lease of life of many parts of the vehicle. Such records are rarely kept, and if so are usually incomplete. They should include a record of daily mileage and routes traversed and time consumed; when tires are put in commission, when repaired and replaced; consumption of fuel, lubricating oil waste; nature and cost of repairs and cause of same; and so on for all details.

A strict record should also be kept of the work of each operator, as he is one of the most important factors tending to make the service a success or a failure, and too much stress cannot be put upon this point. The writer has actually seen one set of tires worn out by one operator in one-half the time that another, performing practically the same service, occupied. This was due entirely to constant running in car tracks and the misuse of the brake.

It is indeed a very difficult matter to get good men who are willing to learn; the majority assuming that they know a great deal after having manipulated the levers for a week or so. The operator has very often a desire to test parts to as near destruction as possible, to see whether they are in running order or not. Speeding up the motor when unloaded to far beyond its normal speed is a favorite and frequent offense. Applying the brake too rapidly is another common and extremely bad practice, bringing unnecessary wear upon the tires and straining all parts generally. Driving the car over rough pavements at too high speed is likewise bad practice, being very detrimental to all its parts. This evil practice is very difficult to stop, as the driver cannot be watched, and he will make up for lost time if occasion demands it. The proper speed to operate commercial cars of varying capacity is a question which can only be settled by experience. Their economic speed must be determined by considering the fuel cost, depreciation, repairs, incurred by different rates of travel.

Great care should be taken to avoid overloading. A car designed to carry a maximum load of say two tons should not be called upon to work for long under a material increase in load, as all parts are strained unduly, especially the tires, one of the most costly components. The springs and axles also are rapidly deteriorated, at a rate which is not warranted by the benefit derived.

The great majority of commercial cars now in operation are shod with solid rubber tires, and up to loads of two tons, seem to be giving rather satisfactory service. The life of these tires is very variable, approximately 6,000 to 9,000 miles, and depends very largely upon the care and treatment they get at the hands of the operator. These tires (up to the loads mentioned) give adhesion under widely varying conditions of road surface, and also are an important element in decreasing repairs and depreciation, by minimizing vibration and shock. In winter is is necessary to use some non-slipping device, such as chains across the tire, which are attached in various ways. They are inexpensive and serve the purpose very well. Experiments are being made with wood tires, but they have not as yet been in service



ARIEL GASOLINE ARMY WAGON CARRYING ABOUT 2,700 POUNDS IN FRENCH TRIALS

on a sufficient number of cars to draw comparisons with the rubber tires.

To simplify the transmission in many instances the wheels are made of small diameter. From the conditions of our paved streets and highways generally, coupled with the fact that horse-drawn vehicles are always equipped with large wheels, it would seem that an error is being made in setting aside such experience by not equipping the commercial car with large wheels. The advantages are many: easy driving, decreased depreciation of vehicle generally and especially longer life of tires.

The type of gasoline engine usually employed on the commercial vehicle is the two-cylinder double opposed, its main advantages being simplicity and cheapness of construction in conjunction with its very fair performance in regard to torque and vibration. Many cars are built, however, using the four-cylinder vertical motor, making a more expensive construction, but possessing its well-known advantages of more uniform torque and excellent mechanical balance. Both types are satisfactory, and time alone will create a superiority.

Transmissions are usually of the planetary or sliding gear type, and both are successful for certain classes of work. The spring suspension of the commercial car is a very important point, and up to date there are few systems that could be called very satisfactory. There are many complex conditions entering into this problem, the discussion of which would be too lengthy here, but suffice to say that different type road surfaces require springs of different periods of vibration if the inequalities of the road are to be taken up

Industrial Vehicle Competition in France.

Special Correspondence.

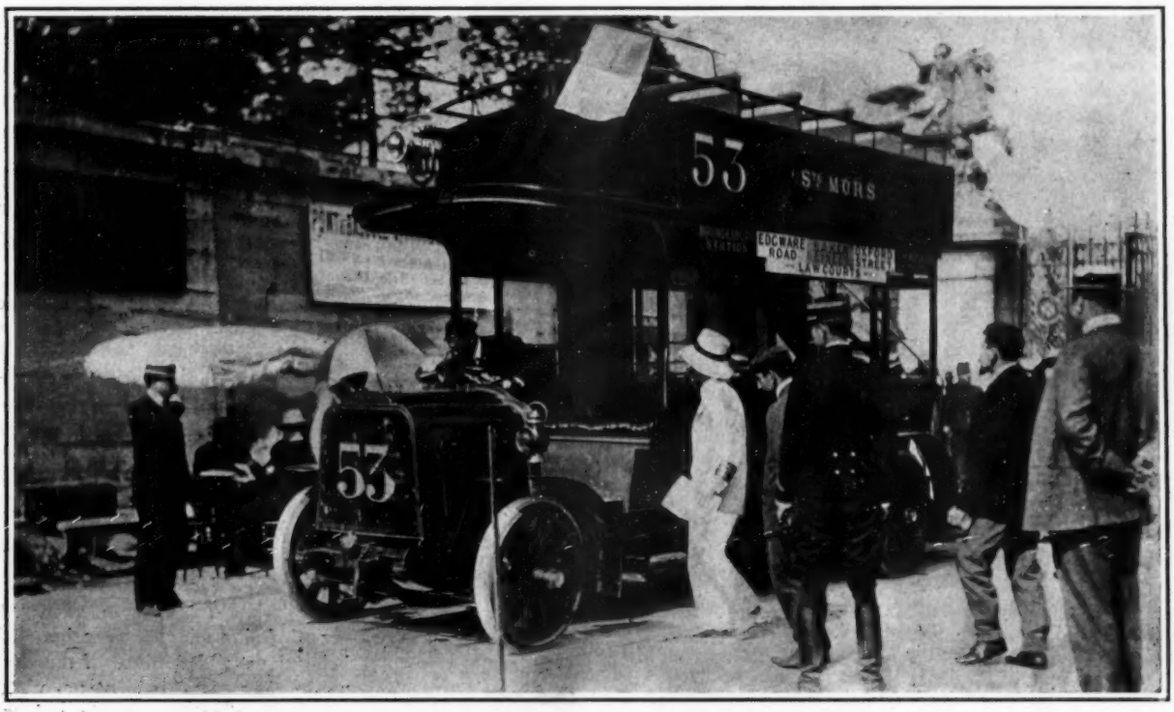
PARIS, July 28.—The finest site in Europe was chosen by the Automobile Club of France for the inauguration of its first competition for omnibuses, trucks and military vehicles. In the western end of the Tuileries Gardens, behind the tall gilded railings which divide it from the magnificent Place de la Concorde, with the long Avenue des Champs Elysées stretching far away to the west, and in the background the shaded avenues of the gardens and the imposing Louvre Palace, it was indeed a royal spot.

Fifty-eight vehicles, out of a total of sixty-five engaged, were present yesterday for the weighing in. In addition to the different classes of commercial vehicles pure and simple the Paris General Omnibus Company had incorporated its scheme for transforming its horse service; the military element, too, was well represented, for the War Office had placed its competition for military wagons under the patronage of the Automobile Club. Last year the endeavors of the War Office to inaugurate a competition for self-propelled military wagons met with so little response that the event had to be abandoned. With the splendid lot of vehicles set before it this year it should not be long before the War Office transforms its transport service.

This is really the first time that industrial vehicles have received an official recognition in France. Notwithstanding the great lead that she has taken in automobilism, France had so greatly neglected the application of automobiles to the industries that there was a real danger of the country being left behind by other nations. This danger has been realized, and the national club has taken the matter up so energetically and organized its competition with so much care that there is every reason to believe that rapid progress will now be made.

This competition is divided into three classes: 1. Vehicles for carrying goods. 2. Omnibuses. 3. Military wagons. The first class is sub-divided into six divisions, beginning with motorcycles for rapid delivery, of which there were only three entries, and including classes for wagons carrying 200 to 500 kilograms (440 to 1,102 pounds), 500 to 1,000 kilograms (1,102 to 2,204 pounds), 1,500 to 2,000 kilograms (3,306 to 4,408 pounds), more than 2,000 kilograms (4,408 pounds), and motors towing several wagons. The 2,000-kilogram class brought together thirteen competitors, among them being a gasoline-electric Krieger wagon, a front-wheel-drive Latil, a Swiss car manufactured by Dufour Bros., and a German Daimler.

The omnibus class includes divisions for vehicles carrying more than six passengers, 'buses carrying twelve to fourteen persons, and 'buses for not less than thirty persons. This last-named division consists of omnibuses intended for service in Paris. The competitors are a Krieger gasoline-electric 'bus, the Gardner-Serpollet steam 'bus which has already undergone officials trials in the streets of Paris, a DeDion-Bouton gasoline 'bus, Eugène Brillé, and a Mors 'bus.



MORS OMNIBUS OF A TYPE BUILT FOR LONDON TRAFFIC WHICH WAS ENTERED IN THE FRENCH TRIALS.

The Mors omnibus is one which has been accepted for service in London. Its wheel base is 4 meters 315 centimeters (170 inches). A four-cylinder, 24-horsepower motor gives a maximum speed of nineteen miles an hour with a total load of thirty-four persons. The weight of the omnibus is 2,600 kilograms (5,730 pounds), and its price is $3,600. A large order for 'buses of this make has just been secured from England. The chassis will be built in Paris and the body work fitted in London.

Twelve military wagons were exhibited by Peugeot, Delahaye, Cottereau, De Dietrich, Gillet-Forest, De Dion-Bouton, Aries, besides a front-drive by Latil and a steamer by Gardner-Serpollet. The body work in every case was based on existing army models, the sides and hood being so bolted together as to be easily taken to pieces.

Weighing-in operations occupied almost the whole of yesterday, and were watched by a large number of persons, notwithstanding the blazing heat. The government was represented in the person of M. Clémentel, Minister of the Colonies, who paid a long visit, accompanied around the grounds by the Marquis de Dion, all radiant at this industrial demonstration, for which he has worked so long.

At 5 o'clock the heavy vehicles were sent off on the first stage of their journey, and this morning the faster delivery wagons and army vans were sent off between 5 and 6 o'clock. The heavy wagons carried their full load in the shape of sand bags, and the 'buses had their full loads of passengers. Several ladies were among these latter. There are seven daily stages over distances varying from twenty to ninety miles, points being given for regularity of running. Fuel consumption is noted, and will be given in the official report, although it will not influence the official classification.

The circuit chosen lies in the north of France, and in order to bring the matter of industrial automobilism before the public exhibitions will be held in Amiens, Rouen and Havré. The dates have been so arranged that the Havre exhibition will be held during the great French Nautical Week, when the town will be sure to be crowded with visitors from all parts. Various fêtes are also to be held at different points en route.

A competitor in an English reliability contest kept within the proper speed limit by using a three-minute sand glass, such as is used for timing boiling eggs. He turned the glass at every milestone. Just what advantage this arrangement has over a watch or automobile clock is not apparent.

If the end of the piston rod of the tire pump projects beyond the piston, cut it off as close as possible. If the piston does not go to the bottom of the cylinder, much time and labor will be lost by alternately compressing and releasing the air contained between the piston, when at the lowest point in its stroke, and the bottom of the cylinder.

Handling of an Air-Cooled Gasoline Car.

By HARRY B. HAINES.

THE machine fitted with an air-cooled motor has the remarkable distinction of being at once the simplest car manufactured and yet the most difficult for a beginner to successfully operate. That the car with the fewest mechanical intricacies and the least number of parts should be the easiest to handle would seem to be a fact settled beyond the chance of an argument, but experience has proven that the driver of an air-cooled car must handle his engine with more care and intelligence than the man with the water-cooled machine, in order to enjoy the same good results and satisfaction.

The air-cooled automobile received its impetus and popularity from the fact that in the early gasoline types water troubles figured prominently as the cause of delays and repair expenses, and were a great bug-a-boo; but to-day leaky radiators, cranky pumps, rotten hose, poor connections and burned-out gaskets do not figure to such an extent, and the air-cooled car depends for the greater part on its *simplicity* as an inducement over its competitor with the water tank and the circulating system.

Styles of Air-Cooled Cars.

There are in the air-cooled class machines of almost all types and weights ranging from the single cylinder runabout to the powerful four-cylinder touring car, but to date the medium weight and priced car in this type has enjoyed the largest sale.

Having selected an air-cooled car and come into possession of it, the owner should be willing to devote considerable time and attention to the mechanism of his machine before preparing for any long runs or making the car do much hard work. An air-cooled engine will keep cool under any condition of ordinary touring use, and is no more prone to delays from over-heating than is a water-cooled motor, providing that its user is posted on the manner that the machine should be used and exercises ordinary good judgment in his driving.

With the air-cooled motor it is perhaps more essential than with the water-cooled that overheating be avoided, for when the air-cooled cylinders are allowed to become much overheated they are invariably damaged to a much greater extent than the water-cooled ones. The loss of a fan belt or the clogging up of the oil feed has resulted in a cut cylinder and a stuck piston in many an air-cooled car, and there is in reality no reasonable excuse that may be offered for a man who allows this to happen except carelessness, and the repair bill is generally a reminder of sufficient "weight" to prevent future offenses.

After Buying the Car.

I have always found it an excellent idea after purchasing a new car to visit the factory where the machine is manufactured and there see its parts made and assembled and familiarize myself with them. A complete knowledge of the position of the various parts and their relations to each other is invaluable, and is the basis of a knowledge that will mean the saving of many dollars in repairs in after days, and greatly lengthen the life and utility of the machine.

Although perhaps a little troublesome to the mind of most purchasers, another good idea is to take the new car when it arrives and have the body removed and then inspect the various parts, and, by having the motor turned over slowly, note how they act. Even though repair shops are to be found in almost all cities and towns, every man should know for himself what is the matter when anything goes wrong with his car, and even though he does not desire to do the actual work of making repairs he will be able to direct them, and know what is a fair charge for the work done.

Handling the Motor.

Important above all things in automobiling is the handling of the motor, for it is here that the life of the car exists, and where the greatest damage may be done by carelessness and neglect. Be the engine a single, double or four-cylinder one, the basic principles are the same, and, generally speaking, may be summed up in a few don'ts, which from practical experience have been proven to me to be worth following.

In an air-cooled engine the getting of oil to the cylinders and on the pistons is the first consideration. In some machines a gravity feed is employed, while in many cars—and I might say in the majority of machines—a force-feed oiler is used. The engine should get from twenty to forty drops of oil a minute, according to the work being done, and the heat of the day, as well as the class of roads being negotiated. The oil supply should be steady and unvarying, and in order to insure this it is essential that the system be gone over and cleaned at least once in every thousand miles. All oil should be well strained before being put into the supply tank, and the greatest care taken to see that no foreign matter gets in that might clog up the check valves or the pump.

In the early types of cars trouble was at times experienced by oil flooding the engine after the machine had been stopped, thus fouling the plugs and causing a very disagreeable smoke when the engine was started. In cars fitted with oilers worked by compression from the crank-case this was often caused by the fact that the compression continued for some time after the engine had stopped its revolutions, and of course the oil kept on flowing. This trouble could be obviated by opening the compression relief after stopping the engine and cranking the engine slowly a few times, and

then leaving it with the compression relief still open, so exhausting all of the pressure in the cylinders.

Syphoning of Oil.

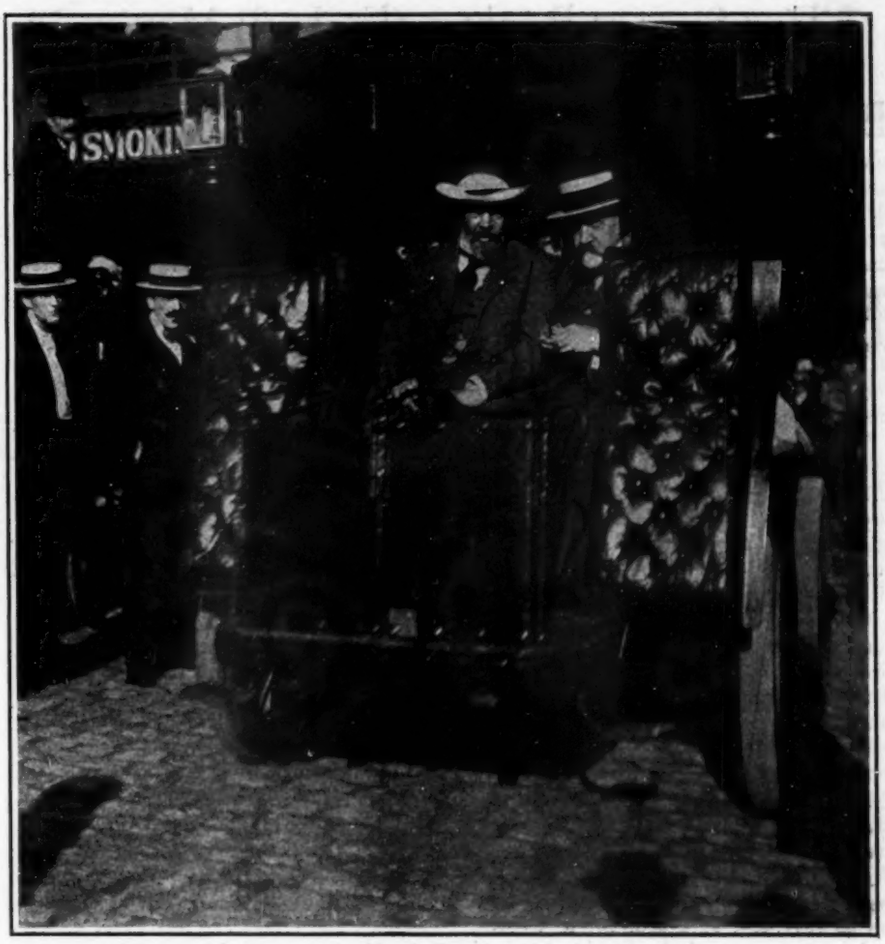
In cars fitted with oil tanks placed on the dash or inside the hood above the motor the same difficulty has been experienced as a result of the syphoning of the oil into the cylinders after the car had stopped. In most cars this has been overcome by placing the supply tank below the level of the engine oil feed.

The fact should be be borne in mind that too much oil is as bad as too little, causing fouling of the spark plugs and carbonization of the excess oil on the piston ends, in the cylinder heads and in the explosion chambers. This carbonized oil, gathered in little heaps, heats up after the engine has been running a short time and glows at a very high temperature, causing premature explosions of the mixture as it is aspirated for compression and robbing the engine of almost its entire power. When this condition has been reached with an air-cooled motor there is only one remedy, and that is to take the valves and pistons out, scrape the piston ends and the explosion chamber until all of the carbonized oil has been removed, and then replace the parts.

Gas and Spark Levers.

Next in importance to the oil as a factor in keeping the motor cool is the manner in which the spark and gas levers are manipulated. Realizing the great importance of this feature, one manufacturer of a popular type of car has arranged the gas and spark levers so that both are operated at the same time and by the movement of the same lever. In this case economy of operation was sacrificed to make the machine "fool proof," and, as far as possible, avoid the overheating of the motor, which might result from careless driving. The same firm, after a purchaser had become familiar with his car, stood willing to sell him a special throttle by which the gas and spark might be worked separately. The importance of this use of spark and gas can be in no better way impressed upon the mind of a user of an air-cooled engine than by the action of the manufacturer of this machine, who did not care to trust a novice in securing a proper mixture unaided.

Racing of the motor is another error fatal to the efficiency of an air-cooled engine, and it invariably causes heating up, whether it be the result of a loose clutch or the ignorance of the driver. The best results are achieved by driving with the gas retarded as far as possible to get the power desired, and using an advanced spark only when desiring to speed on the level. When climbing a hill either from a slow or a flying start, the engine will develop more power if the gas lever is advanced and that controlling the spark retarded as the car begins to lose speed ascending the grade.



An automobile was the first vehicle entered by M. Witte, the Russian peace envoy, and his colleague, Baron Rosen, on their arrival in New York. The accompanying engraving shows the two diplomats in an electric cab, about to leave the Hamburg-American line pier in Hoboken, N. J., where they landed. M. Witte is readily recognized by his great size; Baron Rosen is preparing to enjoy a cigar. It is well known that M. Witte is very favorably disposed toward automobiles; his present visit might prove to be an excellent opportunity to demonstrate to him the excellence of American cars, and for some wide-awake manufacturer to form a Russian connection that would lead to desirable results in the future. American cars are better suited to Russian roads than the more delicate constructions of the European shops.

An air-cooled motor makes a car essentially a high-gear machine. I do not mean by this that the car must be driven at a high rate of speed, but that the high-speed clutch must be used the greater part of the time. Cars of this type are generally designed with motors powerful enough to negotiate ordinary grades and get over sandy and rough roads without the use of the low-speed gears, and for the greater part have been designed without an intermediate speed in order to discourage the use of anything but the high-speed clutch.

(To be continued.)

FIRST THROUGH MICHIGAN WILDS.

Special Correspondence.

Gladstone, Mich., Aug. 5.—Austin Farrell, superintendent of the Pioneer Iron Company's furnace, and two friends comprised the party that has earned the distinction of being the first to make a trip across country from Lake Superior to Lake Michigan by automobile. The run from Marquette to Gladstone, a distance of sixty-five miles, the greater part of it through an unbroken wilderness and over roads that in stretches were akin to cow paths, was made in ten and one-half hours, or at the rate of six miles an hour. The automobile was a machine of 24 horsepower. Nearly one hour was spent in ascending a hill at the crossing of Whitefish river, while, for a distance of four miles, the road was impassible for the machine and it was necessary to make use of a team of horses. When the party reached Gladstone they were covered with mud from head to foot. The automobile was encased in a deep crust of red clay and dirt. It was the third attempt of Mr. Farrell to drive his machine from Marquette to Gladstone, both previous attempts having failed.

Fine Sport at Brighton (England) Meeting.

From Our Special Correspondent.

BRIGHTON, ENGLAND, July 22.—The biggest and most successful auto race meeting that has yet taken place in England was concluded this afternoon, after a four days' run. The Brighton Corporation, at great expense, laid out a mile and a half course along the sea front, and the races were organized to open this course in a fitting manner. The track itself is almost perfectly level, and for half of its length has a smooth macadam surface, the remaining portion being laid with a new dustless material known as "Tarmac."

The events catered for every description of motor bicycle and car, and in all more than 320 entries were received. Besides the usual classes for cars according to price, special events were arranged for cars of standard makes, and these races were particularly interesting.

On Wednesday morning a scratch race for standard 15-horsepower Darracq cars over a mile course brought out eight cars. The final was won by J. Kennedy. For some unknown reason the Automobile Club officials decided not to publish the times made in the touring car events, and thus robbed the whole affair of much of the interest. After a race for touring motorcycles with engines up to 3 horsepower, cars costing under £200 and carrying two passengers competed. An 8-horsepower Stanley steamer and an 8-horsepower Cadillac each won heats, and the Stanley survived till the final, where it was beaten by the English 8-horsepower Rover car. More than forty cars were entered for the next race, for four-seated cars, with price of chassis between £400 and £500. Of the fifteen entries in the first heat, two 15-horsepower Whites and a 30-horsepower Winton survived till the second round. Two 15-horsepower Darracqs—both entered by the same person— were left for the final, which was won by J. Keele. Cars costing £700 to £800 next showed their speed, and for the final were left a 24-horsepower Fiat a 28-horsepower Daimler, and a 35-horsepower Ariel, this last driven by a lady. The Daimler won by 4-5 of a second from the Ariel.

A mile scratch race for racing cars was the final event for the day, and three Mercedes, two Napiers, a 100-horsepower English Darracq, a 100-horsepower Rochet-Schneider, 90-horsepower Mors, and the Hon. C. S. Roll's 150-horsepower Dufaux turned out. The first round eliminated a Mercedes, a Napier and a Darracq. In the second round, Earp, on the six-cylinder Napier, beat Hutton's Mercedes, Earp's time being 45 seconds. The Mors took 56 2-5 seconds, beating the Dufaux, which had only two days before reached England and was running badly. Sir R. Gore's Mercedes beat the Rochet-Schneider in 54 3-5 seconds. In the final, Earp won in 47 3-5 seconds.

On Thursday the touring car races were continued. The 8-10-horsepower four-cylinder Humber won the £200 to £350 class, while in the next exent, with chassis price from £300 to £400, Mr. Lewis won on the new 16-horsepower Rover, the first of the type built. The race for cars from £500 to £600 was won by the 30-horsepower Darracq, while a 28-horsepower Daimler gained first prize in the £600 to £700 class Out of eleven cars which ran in the £800 to £900 class, no less than eight were 30-horsepower Daimlers, and that driven by P. Martin got first place.

Fine sport was witnessed in the motorcycle races, which followed. Ten riders competed, and ran in three heats over the mile from standing start. In addition, the times were taken on the latter portion of the course, so as to get the flying kilometer. Cissac, 12-horsepower two-cylinder Peugeot, won first heat, covering the mile in 53 1-5 seconds, and the kilometer in 27 2-5 seconds. Barnes and Collier, on English-built machines, won the other heats. In the final Cissac easily won, his time for the mile being 49 2-5 seconds, and for the kilometer 26 seconds. Afterwards H. Rignold, 12-horsepower Peugeot, covered the flying mile in 46 1-5 seconds.

The racing cars then ran over the course, the competitors being the same as on Wednesday. The semi-finals left Earp, six-cylinder Napier, who had beaten his opponent in 47 3-5 seconds, and J. Hutton, 120-horsepower Mercedes, the latter's time being 50 seconds.

The final proved very exciting. Hutton got away very well, but Earp lost about eighty yards when getting on to top speed—somehow a common fault with Earp. The Napier rushed down the track and was only beaten by a length at the finish. Hutton's time was 48 3-5 seconds.

Friday's racing opened with an event for standard 15-horsepower White steam cars, five turning up, and this was followed by a handicap race for members of the Ladies Automobile Club.

A race for standard 35-horsepower Daimlers followed, and finally a handicap sweepstake for cars which had run in the standard car events, was run off. In the final a 28-horsepower Daimler was matched against a 7-horsepower Panhard, the latter having no less than 2 minutes start. Although the Daimler ran fast, the Panhard came in an easy winner.

The racing cars then made an attack on the flying kilometer record. The eight cars were the same as on the previous days, except that in place of Mr. Brown's 80-horsepower Napier, Miss Dorothy Levitt (who will be remembered from her connection with English touring car reliability trials) drove S. F. Edge's 80-horsepower Napier.

Each car made three runs, and the average was taken. The 90-horsepower Mors averaged 30 1-5 seconds; Guiness' 100-horsepower Darracq, 25 1-5; Dorothy Levitt 29 1-5; Hutton's, 120-horsepower Mercedes 25 2-5; and Clifford Earp, 24 seconds. Earp won the challenge cup, and in his final run took only 23 seconds for the kilometer (97 1-2 miles an hour). This is English record for the distance.

The final day's racing was by far the most interesting of the meet. First event came the flying kilometer for the Autocar cup. Guiness, on the 100-horsepower Darracq, proved to be the winner, his average time for the three runs being 25 seconds, or just ninety miles an hour. Hutton's 120-horsepower Mercedes was second, in 28 1-5 seconds. Miss Levitt took fourth place.

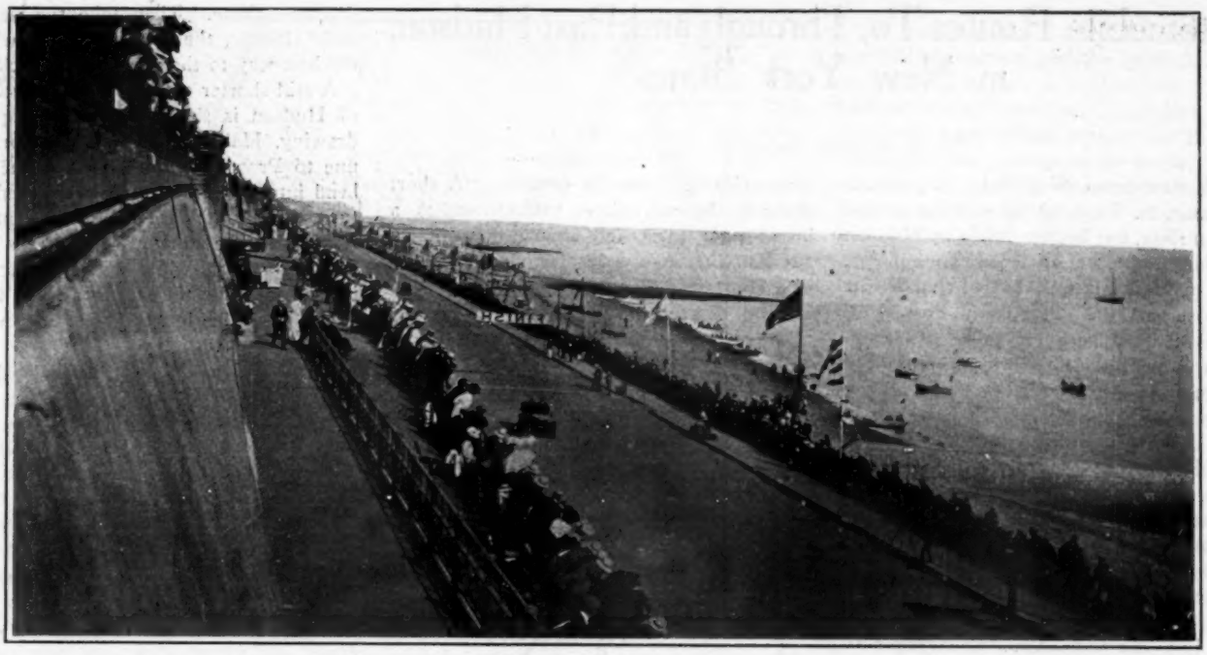
A handicap sweepstake for all touring cars was won by the 24-horsepower *Ger*-cars was won by the 24-horsepower Germain. A similar event for the racing cars Failure of gasoline supply cut out Guiness and left the lady to finish the course alone, her time being 57 2-5 seconds for the mile.

The meet came to a close with several exciting matches between racing cycles and cars. Guiness first ran his 100-horsepower Darracq over the kilometer from standing start with Rignold, on his 12-horsepower Peugeot. As the motorcyclist had to run to start his engine, he was obviously under a great disadvantage.; nevertheless, the car only beat Rignold by 4-5 second in 35 4-5 seconds. Hutton drove his 120-horsepower Mercedes against Cissac's 12-horsepower Peugeot, and, in spite of the startling difficulty, Cissac was only beaten by 2-5 of a second. To conclude the events, Earp made an attempt to break the kilometer record, but his six-cylinder Napier (the car Macdonald ran in Florida) could do no better than 23 seconds, which tied his English record performance of the day before.

France and the Vanderbilt Cup Race.

Special Correspondence.

PARIS, July 25.—Discussion still continues here as to what line of action France should pursue with regard to the Vanderbilt cup race. Four French firms, Richard-Brasier with two cars, Dietrich, Darracq and Renault, are qualified to compete in the great race next October, but it is not yet absolutely certain that they will start. M. Darracq, alone of this number, is quite convinced as to the necessary line of policy. In his opinion, France cannot do other than accept to run in the Vanderbilt race. Not only is he in favor of competing in the American event, but he is ready to run again in the Gordon Bennett race under existing conditions. He declares that, whatever the action of the club, he will certainly take advantage of his qualification to start in the Vanderbilt race, and will compete again in the Gordon Bennett race if it is possible to do so. In his opinion France should establish her Grand



ESPLANADE AT BRIGHTON IN SOUTH OF ENGLAND DURING THE RACES IN WHICH AMERICAN CARS COMPETED.

Prix, if thought advisable, but she should not decline to enter in other great races. Natural selection will soon show which of these events has to go to the wall.

M. Brasier is prepared to give implicit obedience to the Automobile Club of France. He has declared in an interview with the members of the press, that personally he would prefer to rest on his laurels. This, however, is a national rather than an individually commercial question, and the state of the industry still calls for speed tests. As a result of the Gordon Bennett race, he has already decided on the type of touring car which he will build for 1906. Should the French club decide to maintain its engagement, he is quite ready to send his two cars across the Atlantic. If, however, they decide not to compete for this "dangerous cup," he will give up his right to run without any ill-feeling, and will make preparations for the more equitable course announced for 1906.

The choice of the Vanderbilt cup circuit has not met with approval here. The Paris automobile journals are now putting forth the same arguments against the Long Island course as were set forth by Mr. Dinsmore in an interview with THE AUTOMOBILE representative, published on July 20. They declare that an outcry was raised against the Auvergne circuit because of its difficult nature; the Vanderbilt circuit, by reason of its shortness, its narrowness, and the large number of competitors will, however, be infinitely more dangerous than was the Gordon Bennett course. It will give an undue advantage to American constructors, who are specialists in track races and short distances.

William Hosmer has his automobile, which he recently purchased in Tampa, going full time.—*Tampa (Fla.) Tribune.*

Paris-to-the-Sea Fiasco.

Special Correspondence.

PARIS, July 24.—All Paris has been set laughing at the latest motor boat fiasco. The third Paris-to-the-Sea power boat race was on the programme for Saturday last. A daily automobile journal was responsible for the organization; the patronage of the President of the republic, of the minister of marine, of the Automobile Club of France, and of the French Maritime League, had all been secured. Fifty-four entries had been obtained, of which eleven were the fastest racers of the season. From Paris down the river to Havre large posters had been placarded to advise river craftsmen for the final were left a 24-horsepower Fiat, what steps to take in order to assure safety in the locks and on the river.

On the morning of the race a few thousand persons assembled at the starting point in the suburbs of Paris, just opposite the big De Dion-Bouton automobile factory. A grandstand had been erected; flags fluttered lazily in the morning breeze; the cannon had been charged, a trumpeter stood ready to give the preliminary signals, six official timers were prepared to do their duty, journalists and photographers were numerous, and a select company of leaders of automobilism occupied a position of honor. The crowd waited and passed their time reading the columns in the newspapers descriptive of this great power boat manifestation and studying the list of starters. At 9:45 none of the fifty-four competitors had put in an appearance, but this for a time did not cause much questioning on the part of the crowd.

At half past ten a preliminary gun was fired, announcing to the competitors that they must come down to the starting line. Instead of a fleet of fifty-four boats, and the deafening roar of numerous exhausts, three cruisers quietly took a position opposite the starter. The distinguished company looked round in wonderment—questions were asked on every hand, and the organizers ran up the river to see if the other craft had not been detained by the locks. There were, however, no laggards to be whipped in; the famous racers were nowhere to be seen, and a few minutes later the three cruisers went leisurely over the line on their journey to the sea. They were the *Gardener-Serpollet*, the *Mimi*, a cruiser bearing an 8-horsepower Prosper-Lambert motor, and the *Ricochet*, a small craft of 2 1-2-horsepower. A few miles up the river the *Gardener-Serpollet* was signalled by her owner to withdraw, and she returned to her garage; the 2 1-2-horsepower *Ricochet* disappeared, and the 8-horsepower *Mimi* was left a solitary competitor in the "international" aris-to-the-Sea race.

The promoters were in no way abashed. The little craft was ordered to continue the course, and it finished the run to the sea, winning all of the prizes offered for the great event.

A writer in a British automobile journal laments the "fact" that there are no successful motor-driven tire pumps on the market. Take a trip to the "States," Mr. Automan, and you can get all you want.

An automobile road map of southeastern Michigan has been published by Silas Farmer & Co., 31 Monroe Avenue, Detroit, Mich., showing, on a scale of quarter of an inch to the foot, practically all the roads in the territory covered. Highways, electric railways and steam railroads are distinguished by their markings. The map is of good size, and is printed on heavy cloth-backed paper.

Automobile Routes To, Through and Past Hudson, in New York State

By ROBERT BRUCE.

THE tour from New York City to Albany, N. Y., along the east side of the Hudson river, has become fairly well known to a large number of American autoists. In the main, it is a well-defined course—for the most part the old Albany Post road. This is claimed by some to be one thoroughfare from the toll bridge across the Hudson from Albany to Rensselaer all the way to Broadway, New York City, which would carry one, if desired, to the Battery.

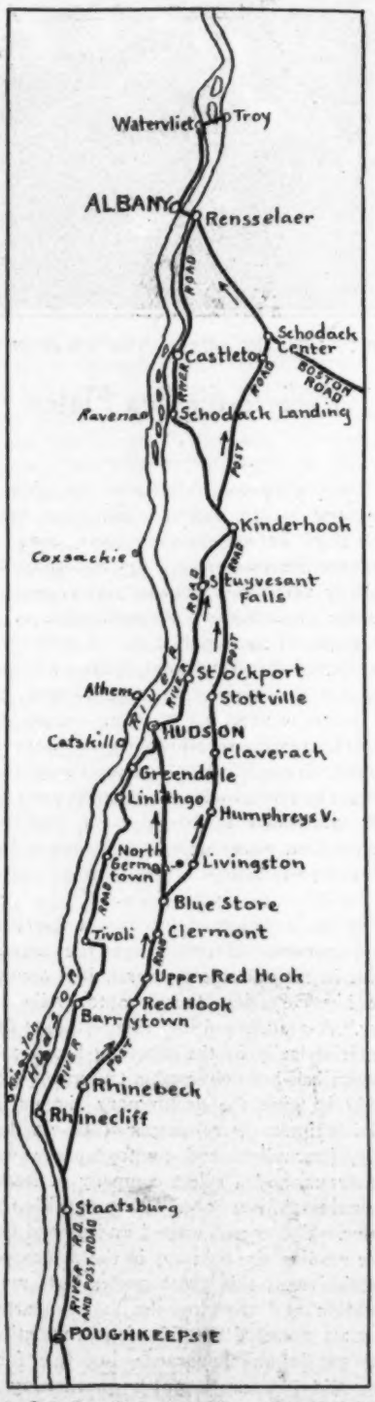
To the tourist actually making the trip over it, the Albany Post road is a more or less distinct line. But it is not entirely distinct, having innumerable branches and intersections all the way, together with windings through several of the towns and cities, where for the time being its identity is altogether lost. In such cases, the stranger, if without advance information, will find it necessary to make inquiries. At a few points, too, automobile travel forsakes for a time the Post road for newer and better ways, the most conspicuous instance of which is in the district near Hudson, N. Y.

At Blue Store, an ancient landmark impossible to mistake, situated about ten miles below Hudson, the tourist from New York, Poughkeepsie and intermediate points, usually bends left around the hotel for an up-run through open country. This intervening ten miles to Hudson is, in fact, an intermediate or middle route between the lower River road along the water front and the Post road, there being in all three separate thoroughfares over this portion of the run.

The Post road does not make this left bend at Blue Store, but continues straight ahead, passing, about ten miles above, through the village of Claverack, which is about three miles east of Hudson, on the line from Hudson to the Berkshire Hills. It would be entirely possible to keep the Post road right through from Blue Store to Claverack and Kinderhook, a few miles above Hudson, where the two thoroughfares again join, but automobile travel, as a rule, prefers to follow one of the two routes nearer the river.

A half hour's ride or so, after making the left bend at Blue Store, the driver will come into Worth avenue, Hudson, keeping same to left bend into Warren street, the principal thoroughfare downtown, reaching hotels and garages, the railway station and the ferry to Athens, N. Y. But a quick, through trip need only skirt the outer edge of the city, in which case the Public Square, bisected by the B. and A. railroad, is the turning point. This square is a short distance along Warren street after the left turn from Worth avenue.

If making a quick, through trip, simply turn right to pass alongside this park, then diagonally right into Green street. A short distance beyond, Green street makes a broad right turn, and almost immediately (at Bell Fountain, a local landmark) there is a short left turn into the road running north. Take this, an unnamed country road, though a few rods of it are within the city limits, crossing the railroad a short distance above. Then take the next left fork (locally, the "lower road") which is the best way to the next town, Stockport.



Routes from Poughkeepsie to Albany, New York State.

A still shorter cut through the outer edge of Hudson is shown in the accompanying drawing. Make right turn from Worth avenue to Prospect avenue, and another right bend into the Union turnpike. Thence left turn almost at once to short connecting street into the northward road, as above. This short cut, while entirely practicable, is likely to take the stranger more time to make than the longer one given via the Public Square.

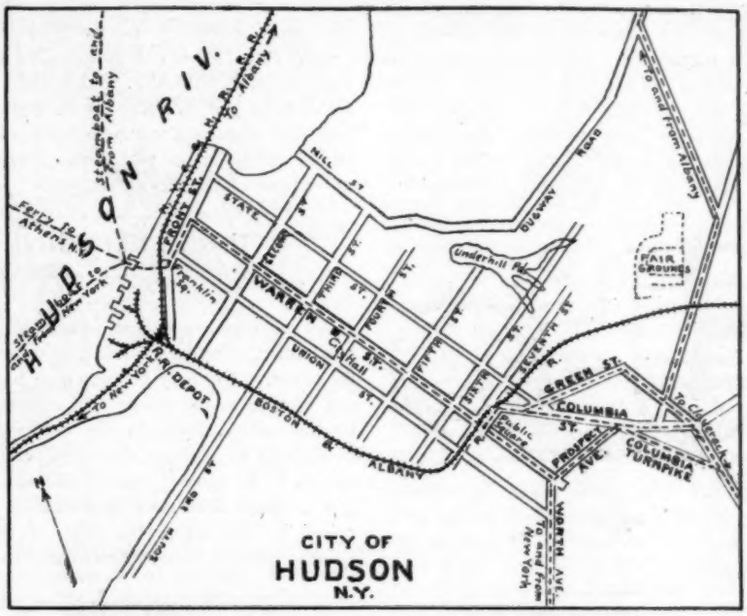
The drawing also shows the local route from the Hudson river water front, where the up and down boats and the trans-Hudson ferry land, through the city of Hudson, to the outer edge, where different routes extend in the three directions most likely to be taken. The directions are as follows: Keep straight ahead from either dock, up short grade, over New York Central railroad tracks, making left turn where trolley is met. Keep with trolley up very steep grade, on Front street, to meeting with Warren street; here make square right turn to and through the central part of the city.

Bound north, toward Kinderhook and Albany, keep Warren street to the Public Square, making left bend to the northward road toward Albany, as given on the map. If bound toward Poughkeepsie, N. Y., and intermediate points, bend right from Warren street into Worth avenue, and on into the road through open country to Blue Store. Here a right bend will put the tourist again on the through road to New York.

Bound from the same water front to Claverack, Great Barrington, Lenox, Pittsfield and other Berkshire Hills points, keep Warren street as before to the Public Square. Cross the railroad tracks and turn left along the further side of square, then diagonally right into Green street. This street makes a broad right bend, passing two cross-roads (the northward road to Albany and the Union turnpike) and merges with the Columbia turnpike direct to Claverack. Thence on to Great Barrington, Lenox, Pittsfield and other Berkshire Hills points.

Though not as good motoring, it is possible on the up-river trip to turn down to the river at a point about three miles above Staatsburg, following the river road through Rhinecliff, Barrytown, Germantown, Catskill Station (Greendale, on New York Central railroad) to Hudson. This route encounters two bad hills entering Hudson—one up and one down, but one who elects to follow it will see the river over this portion of the route, which is altogether avoided by the Post road. It comes into South Third street, Hudson, and keeps the same to Warren street, where it makes left turn to the river front or right turn to the Public Square.

Northbound, it is possible to leave Hudson by Fourth and Carroll streets, but the roads are never as good as the other way,



SKETCH MAP OF ROUTES IN THE PUZZLE CITY OF HUDSON, N. Y.

via the Public Square, first given. What is given prominently on the city map of Hudson as the "Dugway" appears to be a direct northward connection from the city via Second and Mill streets, but the "Dugway" is not suitable for automobiles, being only a lane.

The Albany road north of Hudson enters Stockport, the next town; keep same, and on through Stuyvesant Falls to Kinderhook. At center of town, Kinderhook, the Post road joins, the tourist not having been on it since leaving Blue Store, ten miles below Hudson. This does not amount to anything unless a stranger, southbound, might ask a resident of Kinderhook for the "Post road," meaning the thoroughfare usually traveled to Hudson, in which case the reply would probably lead the autoist astray.

After making the left turn at Kinderhook for the north, however, it is the old Post road all the way through Schodack Center, and, crossing the toll bridge, to Albany. At no other point on the up-trip from New York is the Post road left for as long a distance as in this section, though automobile travel has found a number of locally better ways to cover portions of the route further down.

Ardsley Covered Car.

An exceedingly handsome car with a luxurious enclosed body has recently been delivered by the Ardsley Motor Car Co., of Yonkers, N. Y. The chassis is the standard Ardsley chassis with four-cylinder vertical motor of 30-35-horsepower; while the body, which is of special design, was built by Cole & Woop, of New York. A canopy top extends over both front and rear seats, and the tonneau seat is enclosed by a hood that, while having the appearance of permanency may be folded back when not required. When the hood is to be folded, the side windows are dropped into pockets in the side doors, and the large front window, which extends across the front of the enclosed portion of the car, may be left in position, if desired, when it acts as a wind-break, or may be moved out of the way. The windows slide in brass grooves, and are so fitted as to be weather-proof when raised. All the "irons" used are hand forgings of steel, hand finished, brass plated and polished. All the windows are fitted with rolling curtains.

An ingenious "wrinkle," and one that serves a useful purpose is a leather guard stretched from the inner edge of the front mud-guard to the outer edge of the frame of the car, filling in the space between the mud-guard and the car, through which mud and dirt usually fly and accumulate on the hood and other portions of the front of the car.

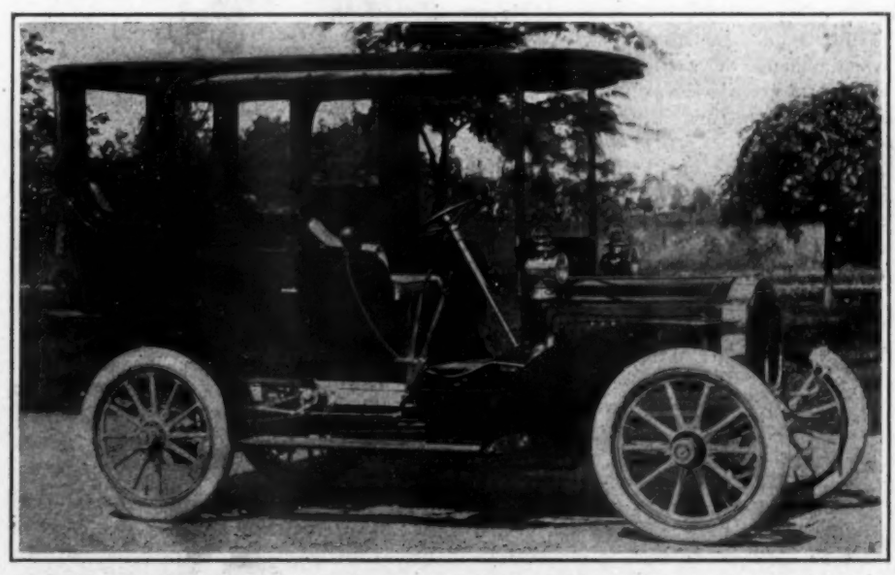
The car is finished in black, with black leather upholstering, and the general effect, while quiet, is rich and luxurious. Long springs, long wheelbase and large tires make the car an easy riding vehicle, and the exceedingly quiet running of the motor, added to the other features, completes a machine that seems to possess every comfort and convenience.

Packard Enclosed Car.

The Packard car illustrated herewith is the result of the working out of the ideas of a customer of the Packard Motor Car Co., of Detroit, Mich. The machine, which the makers call "semi-limousine," was built for Clifford Elliott, of Detroit, whose ideas governed the designing of the body.

A standard Packard model N chassis is used. In place of the usual type of limousine side door, there is simply a wide open space through which the air can blow freely. In case of bad weather, however, all openings can be closed by means of plate glass windows and rolling curtains, the windows swinging to the roof, out of the way, when not wanted. With all windows and curtains open, the car is practically an open one with canopy top; while the closing of windows and curtains thoroughly protects the passengers from rain and wind, making the car available for winter as well as for summer use.

One of the early types of gas engine had a heavy piston which rose freely when the explosion occurred on the up-stroke, being disconnected automatically from the crank-shaft; but on the down-stroke it automatically engaged with a driving mechanism, and the contraction of the gases, brought about by means of a water jacket, furnished the power. This engine is said to have produced a horsepower per hour on about 45 cubic feet of gas, about one-third that used by other gas engines of the period.



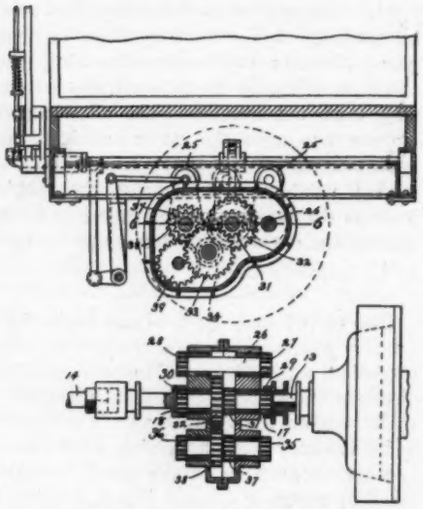
SEMI-ENCLOSED PACKARD TOURING CAR WITH BODY FROM CUSTOMER'S DESIGN.

Patents

Speed Change Gear.

No. 795,479.—H. H. Buffum, of Abington, Mass.

This gear differs considerably from the conventional type of speed-change gear in several ways. The gears are always in mesh, and there are no individual clutches employed. Instead, the gear case is shifted bodily to engage one or another set of gears through separate positive clutches, in the manner to be shown. The gear case is supported by the rollers *25*, which run between guides and bring the axes of one or another of the three shafts on the line *6 6* into line with the clutch and propeller shafts *13* and *14*, according to which gear is desired. In the lower view, which shows a horizontal section on line *6 6*, may be seen



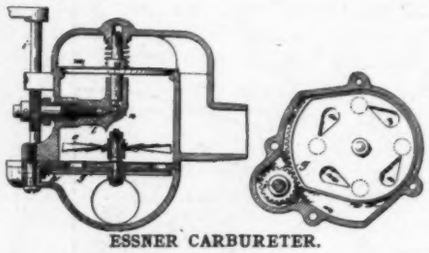
BUFFUM CHANGE SPEED GEAR.

the character of the couplings, which are simply spur pinions *27*, *28*, *29*, *30*, *35* and *36*, which engage internal gears *17* and *18*, the latter being shifted axially by suitable levers to disengage them from the clutch pinion when a change of gear is to be made. Pinions *27 28* are connected by the solid shaft *26* for the direct drive. From *29* the drive is through gears *31*, *33*, *34* and *32*, thus giving the low speed. For the reverse the drive is from *37* through *33*, *34* and *39*, to *38*. The operating mechanism shown consists of a side lever for shifting the gear case, attached to the handle of which is a small lever like the ordinary latch lever, but requiring much more force to operate it. This small lever acts to retract the internal gears *17 18* for the purpose of shifting.

Carbureter.

No. 795,273.—L. A. Essner, of Princess Bay, New York.

A carbureter in which the inventor appears to have endeavored to combine the principles of most preceding forms of carbureter. The air enters the base and passes up through the apertures in the throttle *g*, which is rotated by the pinion *h*, connected to the stem *i*. The light valve *m* is lifted by the air stream, thereby opening the needle valve *n*, and allowing gasoline to drop as shown on the blades of the fan *o*, whose revolving is supposed to distribute



ESSNER CARBURETER.

the gasoline. The screw regulating valve *l* is operated by spiral pinion connection with the same stem *i*, so that it and the throttle work together.

Steering Gear.

No. 794,716.—J. E. Kimble, of Vicksburg, Mich.

A reducing gear comprising a sprocket pinion and wheel connected by a sprocket chain, with the pinion attached to the shaft of the steering cover. From the sprocket wheel a link is connected to the steering knuckles.

Controlling Mechanism for Motor Cycles.

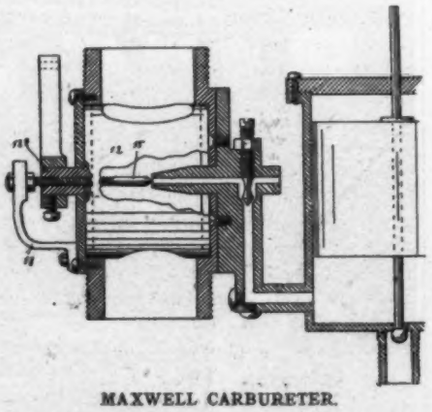
No. 794,727.—J. F. Merkel, of Milwaukee, Wis.

A device acting on the spark timer and exhaust valve cam to facilitate starting by holding the exhause valve open; also to vary the spark time, and to accomplish both these results by the manipulation of a single lever.

Carbureter.

No. 795,357.—H. B. Maxwell, of Rome, New York.

In this carbureter the throttle *12* takes



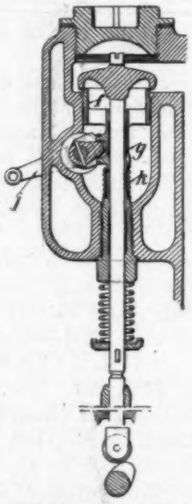
MAXWELL CARBURETER.

the form of a barrel with openings above and below the needle valve. The effect of this is, of course, to increase the intensity of suction at the spray nozzle when the throttle is partly closed, and to offset this the spray nozzle is partly closed by the needle valve *15*, which is threaded into the hub *12a* of the throttle, and is held against rotation by the lock nuts at its end. These lock nuts engage a spring bracket *18*, which yields sufficiently to allow longitudinal movement of the needle valve.

Throttling Inlet Valve.

No. 794,859.—A Gossé, of Petit-Bourg, France.

An ingenious modification of the ordinary mechanically opened inlet valve, by which its effective lift may be varied at will without change in the actual lift as determined by the cam. As shown, the device consists essentially of a piston throttling valve *f*, attached to a sleeve *g*, and sliding within the gas passage in such a way that it can be raised to slip inside the edge of the inlet valve, which is turned downward to permit



GOSSE THROTTLING INLET VALVE.

this. A spring *k* may be provided to steady the movement of the valve and prevent fluttering, and the lever *j*, by which the valve is operated, may be connected to any convenient mechanism within reach of the operator, as, for instance, a lever on top of the steering wheel.

Muffler.

No. 794,926.—B. Crawford, of Auckland, New Zealand.

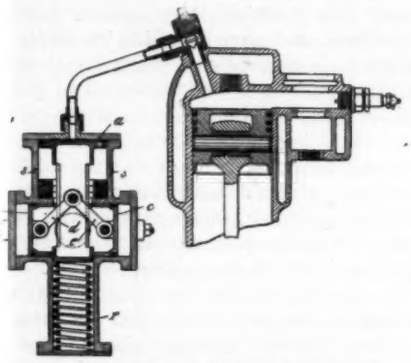
A muffler having the form of a cylindrical drum inside of which is a spiral partition compelling the exhaust gases entering at the outer end of spiral to travel around to the inner end of the same. They escape gradually meanwhile, through small perforations in the heads of the drum.

Power Air Pump for Tires.

No. 795,531.—A. Michelin, of Paris, France.

A pump operated by the explosion pressure from the motor and comprising a power cylinder and piston *a*, a pair of air-com-

pressing cylinders and pistons *b*, a pair of toggles *d e* conecting the latter to the air plunger, and a buffer or cushion spring *r*, for the purpose of bringing *a* to rest at the



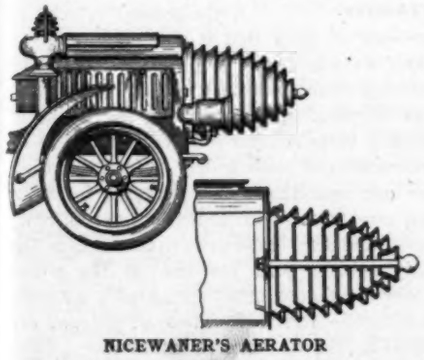
MICHELIN POWER TIRE PUMP

end of its movement. The purpose of the toggle conection is to increase the force available in proportion as the air is compressed, thus producing an easy instead of a jerky movement. The toggles *d e* are straight in line at the end of the stroke, and if *a* overruns it does no harm. Small outlets *s s* relieve the pressure in the bottom cylinder just before the end of the stroke.

"Attachment" for Automobiles.

No. 795,054.—E. G. Nicewaner, of Pittsburgh, Pa.

A simple and artistic device to be attached in front of the bonnet of an automobile and designed by the inventor to combine beauty and utility. In the former direction its success is immediately self evident, while as to its utility it may be explained that it is not intended for a spring buffer, as might hastily be supposed, but is in reality a sort of multiplying wind scoop. It consists, as the sectional view shows, of a series of truncated funnels, nested within each other a short distance apart. The inventor's assumption being that when thus used they



NICEWANER'S AERATOR

direct a more powerful draft upon the radiator or motor than if, say, the largest funnel were used alone without the others. It is called by the inventor an "aerator."

A. D. Henderson is putting up an automobile. This is about the third one for him to put up. Hurrah for Arthur!—*Griffin (Ga.) News and Sun.*

Moths Ride in Autos.

If you see an automobile from Massachusetts coming toward you, flee as from plague. It may bear the terrible arrows of the brown-tailed moth, beside which the sting of the Maryland mosquito is a plaything and the barbs of cow itch are a soothing lotion, says a humorous writer in the New York *Sun*.

Until now the Moth Brothers, gypsy and brown-tailed, have performed exclusively on the stage of Massachusetts, so far as America is concerned. The Massachusetts mothologists have found a European fly which delights to devour the gypsy. Dr. Howard, bug master of the United States Department of Agriculture, is scouring Europe for insects which will put the comether on both gypsy and brown-tail. He is going to bring home a shipload if he can hire them, turn them out at Cape Cod and tell them to go as far as they like.

Everyone knows about the gypsy moth and how it was set loose by a careless scientific person. The brown-tail leads even a faster life. Five years ago it swooped down upon the sacred villages of Malden, Medford (where the Demon Rum has just gone on vacation) and Everett. It skipped from tree to tree, laying eggs recklessly. Now few of Boston's suburbs are free from the brown-tail, which vies with the gypsy in killing trees.

'Tis a vicious beast, the brown-tail moth. It attacks those who would destroy its happy home. The caterpillars, which hatch out early in the spring and again late in August, have stiff, many-pronged hairs loosely attached to them. Along Beacon street it is said of the caterpillars, as has been said of the porcupine, that they can fire these hairs at the foe with unerring aim. At any rate, the hairs get loose, and woe betide those upon whom they land. They fall upon faces, arms and necks, and Gen. Agony follows them.

"The rash itself," says the *Medical News*, which has been investigating the pest, "is usually localized in the form of many discrete papules, intensely painful and itching, lasting from one to two weeks. Some cases are reported from Newton where the eruption was general, the eyes closed, and hospital treatment necessary."

It has been alleged that the arrows of the brown-tail penetrate the thickest clothing, causing pain where the victim least expects it. This may be so, but it is more likely that such a condition can be accounted for by the wonderful sagacity of the caterpillar. When his enemies are not looking he goes to the back yards of the best families and uses the clothes drying on the line for target practice. Two arrows for a sock, three for an undershirt, four for whatyoucallems, and the fiend's work is done. Ironing does not destroy the barb. It lies in wait for the wearer of the garment and plunges itself into his hide with the accuracy of a torpedo.

The victim screams, scratches and swears, but all in vain. Two weeks must elapse before he is rid of the rash, and by that time the brown-tail may have loaded the wash-line again.

Scientific persons believe that the brown-tail has heard about Dr. Howard's errand in Europe and is making desperate attempts to leave Massachusetts. There is one handy way to accomplish this, and that is by way of the automobiles which throng the roads of that State. A moth flies to a limb just over the road, waits until a red devil comes along, and then drops on it. If he is yet a caterpillar, he climbs the tree, and though the process is slower, gets there just the same.

Many of the automobilists are on their way to New York, and they bring the caterpillar and his arrows with them. Next day they go to the doctor, not being sure whether they have scarlet fever or smallpox. The caterpillar goes his way, becomes a moth, and the moth lays eggs, and so on indefinitely.

It is a scientific fact that the moth has spread in every direction from its old home as far as an automobile can run in a day. Whether it has a foothold in New York is not yet certain, but it is very probable.

Perhaps the time will come when every automobile from the moth district will be held up and quarantined on the Pelham road.

English Channel Boat Races.

Special Correspondence.

BOULOGNE-SUR-MER, July 16.—The motor boat race across the English Channel, from Boulogne to Folkestone and back, has not proved itself an unqualified success. Seven racers and twelve cruisers were sent away at 9:25 ocer the 51 nautical miles course. Only two of the racers and four of the cruisers finished, *La Rapiere* winning in the former class in 2:25:50, with *Napier* second in 2:27:04.

The *Mercedes-Charley* took the lead at the start and held it until more than halfway across, when it had to abandon the race owing to water having been shipped into the long, open cockpit. Baron de Caters, who was piloting the boat, was thus forced to allow himself to be towed into Calais. The *Palaisoto*, steered by Henry Farman, was the first to round the mark boat at Folkestone, but soon after had to abandon the race and was towed into port. *La Rapiere* and the two Napiers went round soon afterward. When the French coast was sighted Macdonald, who was steering the *Napier II.*, pushed his boat at still higher speed in an effort to cross the finish line ahead of *La Rapiere*. However, when at the finish, he made a mistake, and instead of crossing the line he went into the harbor. *La Rapier* was fitted with the 100-horsepower motor used in Teste's car, which came second in the Ardennes circuit and first in the Brescia circuit last year.

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Development of Commercial Vehicles. Many persons outside the industry have wondered at and commented upon the fact that automobile manufacturers have given comparatively little attention to the development of the self-propelled commercial or business vehicle during recent years, but have concentrated their capital and best efforts upon the production of high-class pleasure vehicles. Such observers have taken note of the vast possibilities for the commercial vehicle, and in their mind's eye can see the time not many years ahead when horses will be barred from the business streets of large cities. What they cannot see, however, is the manufacturing and financial difficulties that have confronted the automobile builder.

In the nature of things, the pleasure automobile had to be developed and brought to a state of practical utility before the business vehicle. In their pleasure seeking, people do not attempt to make a profit on their investments, and economy of operation and maintenance often cuts little figure with the wealthy purchaser of an automobile; even his less fortunate neighbor, who can afford only a runabout or low-priced touring car, does not expect to effect a "saving" by the use of his machine—he gets his return in the form of enjoyment and good health. Not so with the man engaged in business. Before he can be induced to change his delivery or transfer system from horses to motor vehicles he must be convinced not only that the automobile delivery wagons or trucks will do the work more quickly and satisfactorily, but that they will do it at less, or at least no greater, annual expense, and with no inconvenient interruptions due to the vehicles being laid up for repairs.

Therefore, the manufacturers turned their attention to that line of work in which the purchaser was willing to stand the expense of bringing the cars to practical perfection. Now that this has been accomplished, and the reliability and efficiency of the pleasure vehicle has been so well demonstrated, more attention is being turned to that other branch of the industry in which many see the brightest future of the automobile. The results of this attention and work are presented in the preceding pages of this issue, wherein are described and illustrated leading makes and types of American commercial vehicles of to-day.

That the development and growth will be more rapid from this time on is generally expected in the trade. The tendency extends as well to France and England. The former country has awakened from her self-complacency over her leadership in the building of fine pleasure vehicles to save herself from being outdistanced in the production and sale of business vehicles of all types. The week's trials of business cars just held by the Automobile Club of France show how much alive the manufacturers now are to the possibilities. England has long led all nations in the building and use of very heavy steam trucks, known there as "lorries," and now London has a large number of gasoline omnibuses operating on regular routes, and is fast adding to their number. These are of the double-deck type, and have proved superior in every way to the old horse-drawn 'buses, and more economical. European countries also are eager to adapt power vehicles to military service.

Development in the United States has been along different lines. Beginning with the light steam delivery wagon, we have passed to the light electric and gasoline delivery wagons, and have developed successful trucks of both powers capable of transporting loads of five, six, or seven tons. Not much success has attended our experiments in the steam truck line, unless it be in the heavy traction engines, but we are developing a type of gasoline passenger coach for use on railroad tracks that promises much in the future.

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Glidden Touring Trophy Award. There is bound to be some disappointment over the awarding of any prize in a competitive event, and the closer the finish of the contest the greater will be the heartburning. So in the Glidden tour, the hope entertained by half a dozen entrants whose cars made clean scores is dashed to earth by the announcement of the Tour Commission. Nevertheless, the award of the handsome big silver pedestal, surmounted by the enameled globe in variegated colors, to Mr. PERCY P. PIERCE will be acknowledged by all who have participated in the tour to have been well made and well merited. By maintaining a leisurely pace with his powerful touring car, starting at a comfortable hour each morning, stopping each day for luncheon, and arriving with his party at each day's destination looking fresh, clean and happy, he observed to the full the intent of the donor of the trophy. Others did so, too, but it is evident from the votes cast by the contestants themselves that the delightful tour which this particular party made had not escaped general observation. The award will therefore give as much satisfaction as it would be possible to afford, and Mr. PIERCE will be the recipient of ungrudging congratulations upon his success.

Now that the Commission has finished its work of awarding the trophy and the certificates, its publication of the data secured on the tour will be awaited with the keenest interest. Automobiling having reached the stage where mechanical and tire repairs and replacements have been reduced to reasonable figures, economy of fuel and lubricating oil consumption is of next importance. So much data as is in the hands of the Commission will be of the greatest value to designers, builders and users. The inference that this data is not entirely reliable, which is to be drawn from the suggestion of the Commission of 1905 to the Commission for next year's tour, yet to be named, that official observers be appointed, and from the seeming reluctance to give the information to the technical press, does a certain injustice to those contestants who took pains to make careful and accurate records of their daily runs. Publication of the data with whatever inaccuracies it may contain will be of great value, and will tend toward the elimination of similar discrepancies in future tours and economy tests.

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Automobiles vs. Horse-Drawn Vehicles. Comparison of the pleasure automobile with the horse-drawn vehicle in amount of work that it will do in a given time, and the degree of pleasure that can be derived from its proper use, is really without technical value, since it is impossible to draw a close comparison between means of locomotion of such widely different character and capabilities. The necessity for making comparison with something exists, however, and the horse-drawn carriage is the only vehicle built for use on the public highways that is at all comparable with the automobile and with which all persons are familiar; so we have in automobile affairs the constantly recurring allusion to the work of horse-drawn vehicles.

The absurdity of the comparison was partially shown in the Letter Box Department of this paper for July 27, where a correspondent gave the schedules for two livery rig drives through the Catskills, one of two days, covering a total distance of fifty-six miles, and another of three days, over a

distance of seventy-six miles. These were "standard" drives, for which schedules and routes are regularly published by railroads, hotels and steamship lines. An automobilist with a touring car would laugh to scorn such a schedule, and the owner of a runabout would expect to cover the total distances mentioned, even over the mountain roads, in a comfortable half day's run for the shorter distance and in six or seven hours moderate riding for the longer trip.

No better example of the work that an automobile will do, day in and day out, has been offered than that of the Glidden tour. In this event twenty-six machines, ranging in size from a two-passenger, 8-horsepower runabout to a 45-horsepower, five-passenger touring car, and in price from $750 to $6,000, traveled a total distance of 870 miles in eight days, making each half of the trip in four consecutive days. The longest and hardest day's run of all was the last, from Lenox, Mass., to New York City, 145 miles. The twenty-six cars started between 6 and 7 o'clock in the morning, and a number of them arrived at Yonkers, 125 miles, between 1 and 2 P. M. After seven or eight hours' running over a surprising variety of roads, some of which were as steep, rough and crooked as one is likely to encounter in any settled part of the country, no less than eighteen of the cars reached Yonkers by 4 P. M.

Obviously, the only mode of transportation with which the automobile can sensibly be compared is the railroad train, in luxury of travel as well as in speed and endurance; and it will not be forgotten that on the Pittsburg endurance run of 1903 the competing automobiles got through over the wagon roads to their destination each day when the railroad trains were blocked for several days by one of the worst storms in years.

Automobiling has now reached the point where the low cost of traveling excites as much interest as the ability to finish a long tour on schedule time. The consumption of gasoline on the Glidden tour was from seven to eleven gallons per day by each car, averaging approximately fifteen miles to the gallon. At twenty cents a gallon this amounted to 1 1-3 cents a mile. Add to this 1 1-2 quarts of lubricating oil per day, at twenty cents a quart, or 1-4 cent a mile, and it will be seen that the operating cost was but slightly more than 1 1-2 cents a mile, for from two to five persons.

Operative cost is of insignificant moment, however, as compared with the wonderful independence of railroads and street cars that ownership of an automobile confers. To be able to step into a machine at the office door on a Saturday afternoon, and after a refreshing drive of four or five hours through attractive rural scenery find oneself at a country house or a good hotel in the heart of a cool mountain retreat in time for dinner, to be succeeded by a restful Sunday far from the heat and noise of town—such is the real secret of the sudden popularity of the automobile with the city man.

Autophobia Rampant in Illinois.

Violent Measures Adopted to Enforce Village Regulations—Chicago Club to Fight Restrictions.

Special Correspondence.

CHICAGO, Aug. 5.—Classic Evanston, the north-shore suburb of Chicago, just now is the storm center of the autophobia which has stirred the Chicago metropolitan district for at least a year. The village of Glencoe, near neighbor to Evanston, is vieing with its more cultured and larger village rival, while Winnetka, also in the north-shore string of small municipalities, is a pretentious third in its restricting sentiments against the automobile.

Against all of which the Chicago Automobile Club stands at bay, determined to fight all strictures through the courts to a definite and satisfactory finish if the higher courts of Illinois shall rule against the class legislation which the automobile owners and drivers feel has been directed at them.

Along this north-shore line of suburban towns the automobilists of Chicago always have found the most inviting stretch of roadways, with the greatest variety of woods, hills, meadows and lake shore stretches pleasing to the eye. But the north-shore towns have been hard to placate in their animosities toward the automobile. Always they have seemed to vie with one another in restrictive legislation as to the speed of the machines, the tooting of horns and the ringing of bells. Recently Evanston became possessed of a new chief of police, of military disposition, and on July 26 the storm broke when, under the instructions of the military chief, Patrolman Johnston fired two shots at a machine which had refused to stop when the stop-watches of the road guards showed an alleged speed of twenty-eight miles an hour.

The first shot from the revolver punctured a front tire and brought the machine up with a sharp turn at the curbstone, while a second shot smashed the side of the tonneau, in which were Mr. and Mrs. R. H. Courtwright, of Chicago, sitting behind Chauffeur William Walsh. Evanston's chief of police at once took up the praises of his officer, who is known as a crack shot, while most owners and operators of machines came out in protests of various forms against any police officer who, because of a mere misdemeanor, would risk revolver bullets in stopping the misdemeanant.

Glencoe seemed to have been waiting for a sympathetic overt act of some kind, and a few nights later its village council met and passed an ordinance prescribing a process of "bumping the bumps" for any automobile or other vehicle which hereafter shall traverse the length of the town. The scheme is to build in the streets at 100-yard intervals a cement obstruction, six inches high at the apex, with approaches from the level two feet in length, the object being to make any considerable speed in the roadways not only unpleasant, but dangerous.

Winnetka followed upon this measure with an ordinance stipulating anything above five miles an hour to be an infringement of the rights of its citizen on foot, or who might be in carriages traveling at twelve or fifteen miles an hour.

And at Highland Park, where the government reservation of Fort Sheridan shows its frowning gates, the commanding colonel, acting upon the initiative of the Evanston chief of police, has decreed that any visiting automobile exceeding the ten-mile limit shall be fired upon by the guards with intent to wreck the tires, front and back, if need be.

Then, scarcely more than incidental to all of this, the Lincoln Park commissioners in Chicago have closed nearly all the road ways of the park to any automobile of any description, moving at any snail's pace possible to the mechanism of the machine.

Through Attorney S. S. Gorham the Automobile Club of Chicago stepped into the fight at this point. A dozen members of the club, while backing him, also came up to the head of the Chicago police force to volunteer as special policemen without power to fire upon speeding machines, yet ready and anxious to co-operate with his forces against all speed violators within the city limits.

Policeman Johnston in the meantime was arrested on a State warrant, to be prosecuted by the club and the owner of the damaged automobile.

Attorney Gorham addressed a communication to the Lincoln Park commissioners, demanding that roadways open to carriages also should be opened to automobiles.

Glencoe took up the work of planning for the "bump the bumps" shutes in its thoroughfares, and is still planning. And Winnetka's five-mile-an-hour schedule is in full force and effect.

As to the proposition to make special policemen of a dozen members of the Chicago Automobile Club, it has been discovered that according to the law a special policeman can be appointed for a fixed and defined special territory only.

The Lincoln Park commissioners so far have ignored the demands of Attorney Gorham for the equal rights of all pleasure vehicles to all roadways in the park.

When Glencoe shall begin to put in its special obstructions in the streets and roadways of the village the Chicago Automobile Club's attorney immediately will make application for a writ of injunction, which, it is believed, will issue from any court in the county. Then whether Winnetka's snail's pace for automobiles is reasonable and in accord with public policy will come up for decision by the higher courts.

Ex-President John Farson, of the Chicago Automobile Club, is a leader in the actions of the club against what he terms "sixteenth century measures" for control of the automobile.

"Glencoe is four hundred years behind the times in its absurd ordinance," says Mr. Farson. "Evanston is even worse in firing upon machines which, at the worst, merely have violated a city ordinance. The Chicago Automobile Club is not in sympathy with lawbreaking of any kind, but it has the opinion of the second highest court of Illinois that the streets are for all of the people and for all vehicles of common transportation. We shall fight to the court of last resort to discover what is the law. When the powers of the law are defined and legal enactments are made under them the decent owners of machines will abide by these statutes. But 'we want to know.'"

Among attorneys sentiment is divided upon the proposition of firing upon machines that will not stop when challenged. But that an injunction will restrain the Glencoe bump building is agreed upon as certain.

NEW TRADEMARK LAW.

Provisions Upheld by Court of Appeals—Applications Under Old Law Void.

Special Correspondence.

WASHINGTON, D. C., Aug. 5.—The Court of Appeals of the District of Columbia has sustained a comprehensive decision of the Commissioner of Patents which is of the utmost importance to trademark owners. It is the first important decision under the new trademark law enacted during the last session of Congress, and holds, in effect, that a large class of applications under the old trademark law of 1881, which have been assumed to be still pending in the Patent Office, although adversely acted upon, cannot be further considered under the new law, but must be treated as finally rejected under the old statute. The court's decision further holds that they can be revived only by the filing of new applications under the present law.

At the Patent office it was stated that "applicants whose cases come within the scope of this decision will be put to a considerable expense, as they will be obliged to begin proceedings afresh, and again pay all fees provided by the statute. The rights of such trademark owners, however, are not prejudiced by the decision, but, on the contrary, it is probable that in many cases trademarks rejected under the old law will be found to be registerable under the new statute."

It is understood that several hundred applications now before the Patent Office will be finally rejected under the decision, but doubtless many of them will be revived by the filing of new applications in conformity with the provisions of the new act.

TROUBLE IN GRAND RAPIDS.

Automobile Club Retaliates for Alleged Unwarranted Arrests.

Special Correspondence.

GRAND RAPIDS, MICH., Aug. 5.—The fight between the automobilists and the board of police and fire commissioners of this city, as a result of continued arrests of the former for alleged violations of the city automobile ordinance, has developed into a bitter war.

The automobile club has appointed a committee, consisting of Dr. Perry Schurtz, president of the club, Dr. Henry Hulst and Dr. E. H. Eddy, and this committee has secured evidence of Sunday law violations which they declare will be pushed. They have already caused the arrest of four hotel keepers on charges of keeping their hotel bars open on Sunday. The men are now awaiting trial.

The committee states that they simply wish to show the people that they are not the only violators of the law in the city and that they have secured evidence against others. The board has taken no official action, and members refuse to make any statements. The committee has submitted to the board a communication in which it is stated that proof has been secured against numerous law breakers in the city. This proof has been offered to the board.

L. W. Welch, secretary of the automobile club, expressed himself as dissatisfied with the methods pursued by the committee, and has resigned his portfolio. In regard to this Dr. Schurtz states that he expected a number of deserters, but that the majority of the members of the club have promised to stand by him, and that the fight will be waged to the end and that the club will prove to the board that they are being discriminated against.

An incident that fanned the flame of discontent among local automobilists happened when Bicycle Officer Dunn stopped a touring car driven by William Doughty, and placed the driver under arrest for fast driving. In the car at the time were Frank Leonard, his wife, son and daughter. The machine was stopped on street car tracks and was struck by a car, being practically wrecked. Doughty was thrown over on the front of the machine, sustaining serious injuries, and is now under the care of a physician.

The driver states that the machine was struck by the car because the officer refused to allow him to move it off of the track. In this he is corroborated by young Leonard, who was riding in front with him when the accident occurred.

According to Mrs. Leonard, the car was going slowly and was not exceeding the legal rate of speed. George W. Hart, of the firm of Adams & Hart, owners of the machine, is very indignant, and a suit may be brought against the city to recover the amount of damages.

The automobilists are up in arms over this latest incident, and the trouble may result in the complete closing of all stores, theatres, and even peanut stands, in the city on Sundays.

FIGHTING PARK REGULATIONS.

Special Correspondence.

SAN FRANCISCO, Aug. 1.—The automobile livery interests of this city have begun a fight to wipe out the ordinance of the Park Commissioners which closes Golden Gate Park to automobiles after eleven o'clock at night. A driver for one of the livery companies was arrested by arrangement a few nights ago, and the matter will be fought through the courts. Subscriptions are being asked from the dealers for the purpose of testing the law, but as yet there has been no response except from those who are interested in the livery business.

The Automobile Club of California is behind the Commissioners, and will oppose any effort to nullify the ordinance.

The principal hardship through the ordinance comes to those who rent cars for the Tenderloin trade in the late night and early morning hours. The Park Commission, which has always been very conservative with regard to the opening of the park roadways to automobiles, was recently brought to a more liberal view at the solicitation of the Board of Governors of the Automobile Club, and finally agreed to open all the park roads to automobiles for a sixty days' trial, under certain restrictions. The club members feel that it is not wise to antagonize the Commissioners at the present time, particularly in view of the fact that the "night-hawk" drivers make little pretense to observe the speed laws.

It is felt by the Board of Governors that a compliance with the present law will lead to further concessions, and that it is not unwise to go slow until the general users of the park roads have become used to the cars. It is thought that the hardship to the best interests of the automobile game is not great enough to make a legal fight, that very likely would be lost in the end, worth while.

VERDICT FOR DAMAGE SET ASIDE.

Special Correspondence.

MINNEAPOLIS, Aug. 5.—Judge Brooks has this week set aside the verdicts in two damage suits against automobilists because it was proven that the horse was not "city broke." John Duffield and Harry B. Cramer were coming down Fifth avenue April 5, when Mr. Cramer's horse took fright at an automobile driven by Louis Basting. Both men were thrown out, and in the suit which followed Mr. Cramer was allowed $316, and Mr. Duffield $658. An appeal was taken, and in a lengthy order Judge Brooks held that the verdict was to a great extent the result of prejudice against the automobile. He also cited the fact that the horse was not city bred, but had been brought to Minneapolis from a farm but eight days before, and that it had, consequently, not been sufficiently educated in city ways.

Judge Brooks further declared that people who use automobiles have as much right to the road as those who travel by the old methods. In setting aside the verdicts the judge granted new trials.

ALL PITTSBURG AROUSED.

By Act of Reckless Chauffeur—Rewards Offered and Officials Active.

Special Correspondence.

PITTSBURG, Aug. 5.—The chief topic of interest in Pittsburg automobile circles for ten days has been the chase and capture of Frank Hodge, the chauffeur who ran down Angelo Pouch on Saturday evening, July 29, and caused injuries which, it is feared, will result in his death. Public indignation against reckless drivers was at a high pitch before this event on account of recent serious accidents of a similar nature. The fact that Hodge's action was so bold and cold-blooded, and that it was witnessed at close range by a number of Pittsburg's most prominent citizens, made the case more aggravating and brought it to the notice of the authorities in a way that called for immediate and energetic action.

Following the offer of $100 reward, which the Pittsburg Golf Club made for the capture of Hodge, the Automobile Club of Pittsburg offered a reward of $500. Hodge left the city the night of the accident and went to Buffalo. Here the Pittsburg authorities got track of him, and, at their request he was arrested by the Buffalo police on Thursday. It is said that Hodge is a member of a prominent Buffalo family and that through their efforts he was released on $1,000 bail.

This action was a surprise to the Pittsburg detectives, as they claimed the Buffalo authorities had no right to release Hodge until they had had an opportunity of serving extradition papers on him. These were issued at the Allegheny county court house Saturday, but may not be served. Meanwhile an effort will be made to have the Buffalo authorities postpone Hodge's hearing, in order that he may be brought back to Pittsburg and tried on a charge of felonious assault and battery.

TOLEDO DRIVING CLUB

Objects to Use of Track for Auto Races—May Seek Aid of Courts.

Special Correspondence.

TOLEDO, Aug. 5.—The Toledo Driving Club does not take kindly to the idea of having its track used for automobile races. While not the owner of the track, it has leased it for the season, excepting certain dates which are to be used for horse racing and similar matinees.

The owners of the track, however, leased it for the automobile races a few days ago, and this stirred up the blood of some of the members of the Driving Club. Perhaps the sentiments of I. R. Sherwood, president of the club, may show the sentiments of at least some of the members. Said he: "We

are investigating the question to see whether we procure an injunction to prevent the track from being used for automobile races. Several hundred dollars were expended in getting the track in shape, and after the automobile races it is in such bad shape that the club must expend a large sum in repairing it."

It is possible that future automobile meets will not be held here if the promoters are obliged to fight their way in the courts. It is pleasing to note, however, that all the members of the Driving Club do not coincide with the ideas of the president, and it is possible that when a meeting to consider the question is held that the objection will be voted down, a thing which some of the members are at present working for.

LONG BRANCH CARNIVAL.

Races, Non-Stop and Economy Run and Six-Day Tire Test Planned.

Entry blanks for the second annual Long Branch Automobile Carnival have been issued by Secretary W. J. Morgan, No. 116 Nassau street, New York, representing the North Jersey Automobile Association, under whose auspices the events will be held.

The carnival will open with races at the Elkwood Park mile track on Friday and Saturday, August 18 and 19, six events having been arranged for each day. At 12:05 o'clock Monday morning, August 21, the six-day non-stop contest will be started. This will include the tire and fuel economy contest. The test will be made over a 30-mile circuit, with Long Branch as the starting point. Awards will be made by a commission on the following basis: Non-stopping of motor, 50 per cent.; mileage covered, 25 per cent.; economy of fuel, 25 per cent. Each contesting car must be provided with at least two crews, and an observer will accompany and ride in each car throughout the test.

For the six-day tire test for the Burrelle trophy four to six Maxwell cars will be provided, all of a similar model and weight. Each tire contestant will fit one of the cars with its make of tires. The cars must average not less than 12 miles an hour for the entire six days, figured on gross time. An observer will accompany and ride in each car, and the observers will be changed so that no one observer will ride in one car more than three shifts during the week. Each contesting car must be equipped with two odometers, which will be tested and approved by the officials.

Observers for both the non-stop and economy run and the tire contest will be residents of Long Branch and vicinity, men unknown to the automobile trade.

Entries will close with Secretary Morgan, No. 116 Nassau street, New York, August 14-17.

PIKE'S PEAK OR BUST.

Special Correspondence.

DENVER, August 3.—Entry blanks for the Pike's Peak or Bust Automobile Climb, which is being promoted by G. A. Wahlgreen, are being prepared and will be mailed within a week.

A committee is now working on the conditions for the climb and will have them ready in a few days, at which time they will be announced.

The entry fee has been placed at $100, with a refund of half that amount if the entrant actually undertakes the climb.

The date for the climb has been fixed for the last day in September, and will be preceded by races at Overland Park, Denver, and a road race from Denver to Colorado Springs.

MORE JERSEY RACING.

Association Formed at Atlantic City to Promote Racing on Beach.

Special Correspondence.

ATLANTIC CITY, Aug. 7.—Encouraged by the success of the recent Cape May beach racing venture, automobilists and city officials of Atlantic City are endeavoring to popularize the 2 1-2-mile stretch of beach below that place between Ventnor and Longport, as a racing center. The beach was tested last week and found suitable at low tide for contests in which not more than four cars compete, and equally as smooth and hard as that at Cape May.

Arrangements have been made for the incorporation of a local automobile racing association. It was decided at a meeting held last Tuesday night to hold a test tournament over the course on Saturday, August 19. In addition to a series of events for stock and racing cars for the mile and kilometer, there will be several attempts on the records for those distances.

Another candidate for racing honors is Seven-Mile Beach, extending from Avalon to Stone Harbor, and about midway between Cape May and Atlantic City. While the beach itself, by reason of its being without a single obstruction, and of its length, width and firmness is the superior of the others, it has the disadvantage of not possessing a suitable road connecting it with the mainland. At a meeting of the Avalon Improvement Company and the Cape May County Board of Freeholders, measures were taken to overcome this defect by next spring, and before the summer of 1906 it is proposed to build a clubhouse and garage in Avalon for the new racing organization which was formed there last week.

CAPE MAY BEACH RACES.

Two-Days' Program Announced for August 25 and 26.

Special Correspondence.

CAPE MAY, N. J., Aug. 5.—Under the auspices of the recently organized Cape May Automobile Club a two-days' race meeting will be held over the beach course here Friday and Saturday, August 25 and 26. The races will be conducted under the rules and sanction of the American Automobile Association. S. M. Butler, secretary of the A. C. A., will act as official timer; A. G. Batchelder, secretary of the A. A. A., referee, and F. J. Wagner will officiate as starter and clerk of the course.

A number of handsome prizes have been offered for the several events, and special prizes will be given for the mile and kilometer speed trials. The $1,000 and $500 Cape May trophies will be given outright for the gasoline cars making the fastest mile and fastest kilometer, respectively, over this course during the season.

Owing to the tidal conditions the races will be started at 8 o'clock on Friday morning, and all drivers should report at the club rooms in the Stockton Hotel, Cape May, Thursday night before midnight. The entries will close with J. Hiscock, secretary Cape May Automobile Club, No. 1438 South Penn square, Philadelphia, August 22.

LABOR DAY RACING AT BENNINGS.

Special Correspondence.

WASHINGTON, D. C., Aug. 5.—The Central Labor Union has been granted a sanction for a race meet at the Bennings track on Labor Day, and a committee is now at work forming a program. Efforts are being made to interest several drivers of note, in the hope that one or more stars can be secured.

Washingtonians do not have many opportunities to see automobile racing, but they are loyal to the game and will turn out in great numbers if the sport is worthy.

The Bennings track has been the scene of many notable running races, and it considered one of the best mile tracks in the country. It is about three miles outside the city limits and a trolley road leads to the track gates, while automobilists can reach the track over one of the best roads leading out of the city.

WISCONSIN FLOWER PARADE.

Pretty Women in Decorated Cars Make Gorgeous Display at Oconomowoc.

Special Correspondence.

OCONOMOWOC, WIS., Aug. 3.—The first automobile floral parade ever held in Oconomowoc was the principal feature of a two days' fete held here last Friday and Saturday. Oconomowoc is probably the best known summer resort in this section of the country, and is patronized by wealthy families of Chicago and Milwaukee, as well as by a great many from Southern cities. Inasmuch as many of these patrons are automobile enthusiasts, it was decided to hold an automobile parade, which was a huge success.

Late Saturday afternoon the machines, forty in number, wound their way round Fowler Lake, and through several of the principal streets of the city. The first prize was won by Louis Dozier, of St. Louis, whose machine was transformed into a sailboat. The sails floated in the breeze and the hull concealed the car completely. Mr. and Mrs. C. W. Scudder, also of St. Louis, occupied the car with Mr. Dozier.

Mrs. P. A. Valentine's car was awarded second honors for decorations. It was covered with red poppies, and the occupants were Mrs. John J. Mitchell, Mrs. Vernon Booth and Mrs. W. J. Chalmers. C. A. Leiter, of Chicago, acted as chauffeur. Another car entered by Mrs. Valentine was decked with sunflowers.

One of the most attractive cars was that of John Dupee, which was decorated with poppies, Easter lilies and chrysanthemums, which were held in position on top of the canopy by a beautiful doll. The occupants of the car were Misses Phœbe and Maria Eckels and Misses Marion and Charlotte Partridge. Mr. Dupee also entered a second car.

Charles H. Simms' car was one of the most striking in the parade. It was a mass of pink roses on pink tarlatan. The ladies wore pink with pink hats and carried pink parasols decorated with roses. Mr. Simms, Mrs. F. W. Peck, Mrs. Charles Simms, Miss Charlotte Simms and W. H. Simms occupied the car.

TOLEDO RACE MEET.

First of New Association—Oldfield Breaks Half-Mile Track Record.

Special Correspondence.

TOLEDO, Aug. 4.—The half-mile track record was broken here on July 30 when the Toledo Automobile Racing Association held its first meeting. Barney Oldfield, driving the Peerless *Green Dragon*, covered the mile in 1:11 2-5, just 2 2-5 seconds faster than the former record, which was made by him at Omaha last summer.

The three-heat match race for $1,000 which had been arranged between Oldfield

and Earl Kiser was called off at the beginning of the second heat, when Kiser's car was found to be out of order. Oldfield won the first heat by about 50 yards, in 3:39.

The other races of the afternoon were between local automobilists, and afforded fairly good sport. The attendance was about 5,000, considerably larger than was expected.

NEW 'FRISCO BOULEVARD.

Twelve-Mile Driveway to Be Built by City and Club.

Special Correspondence.

SAN FRANCISCO, Aug. 1.—Plans have been announced by the Automobile Club of California for the new boulevard out of San Francisco into San Mateo county, and subscriptions have been invited. The city of San Francisco will construct the road out Nineteenth avenue to the San Mateo county line, past the new golf clubhouse and the Ingleside track, and from that point the Automobile Club will take the matter up.

The San Mateo road will cost $35,000, the amount to be raised by 350 subscriptions of $100 each, and on the completion of the road it will be turned over to San Mateo county, to be maintained by it thereafter, with the only condition that it shall not be open to heavy teaming. It is proposed to start work about August 1.

This road has been needed more than any highway improvement in the vicinity of San Francisco, as there is not a safe highway out of the city at the present time. The roads in San Mateo county beyond the proposed boulevard are excellent, but owing to the trouble in getting out of San Francisco the greater number of the car owners prefer to take the ferry across the bay into Alameda county. The new road will add greatly to the pleasure of automobiling hereabouts, and will increase the popularity of runs into the picturesque country on the west side of San Francisco bay. The road will itself lead through a picturesque section, the greater portion of the way being along a line of foot hills. There will be no grade greater than five per cent., and for most of the way it will be 2½ per cent. or less. The newly constructed portion of the road will be about twelve miles in length.

ST. PAUL WANTS GLIDDEN TOUR.

Special Correspondence.

ST. PAUL, Aug. 5.—The A. C. of St. Paul is waging a tremendous campaign to secure the Glidden tour for next year. B. A. Ledy, secretary of the club, has taken the matter up with the Glidden Tour Committee in the hope that it will decide to select the Saintly City as the starting point of the 1906 tour. Reports have reached St. Paul that many tourists are in favor of abandoning the route through the White mountains in favor of some Western city. This has encouraged the automobilists of St. Paul and Minneapolis, both of which cities have made application for the tour.

ROAD BUILDING IN MINNESOTA.

Special Correspondence.

ST. PAUL, August 4.—St. Paul automobilists are pleased at the announcement that plans for the construction of about twenty-five miles of good roads in St. Paul and vicinity are being considered by the Ramsey County Good Roads Association, which held its first annual meeting Tuesday, Aug. 1. Twelve miles of permanent road improvements were made during the last year, and plans are under way to make the total mileage forty.

The association is working in co-operation with the board of county commissioners. It has secured the passage of a law providing that all improvements in excess of $100 shall be let by contract, which has resulted in securing much better service, and a law authorizing the expenditure of a larger amount than heretofore for permanent roads. The authorities have expended $35,000 this wear, and with this sum have accomplished almost as much as was accomplished by $250,000 expended during the previous ten years. The association is working to improve Arcada street, the Point Douglass road, Cleveland avenue, Cherokee avenue and State street in St. Paul and several roads leading from the city to main highways in the country.

WORKING ON MEADOW ROADS.

Special Correspondence.

PHILADELPHIA, Aug. 7.—Loud and constant complaints of local automobilists as to the miserable condition of the "meadow road" connecting Pleasantville and Atlantic City have at last roused the road officials of Atlantic county to action. The new road, which has been in course of construction for several months, and work on which has been delayed through contractors' mistakes and legal squabbles, will be rushed to completion immediately.

The automobilists got together last week and told the Atlantic City Hotel Men's Association that unless work on the road was recommenced at once they would cease coming to the shore. This was not without result. The association forthwith insisted on the Board of Freeholders taking instant action, and within forty-eight hours work on the road was again in progress. It is now announced that the road will be completed about September 15.

MEETING OF ROAD MAKERS.

The semi-annual convention of the New York and Chicago Road Association will be held at Lakewood, on Lake Chautauqua, N. Y., August 11-12, under the joint auspices of the Lakewood Chamber of Commerce, the New York and Chicago Road Association and the National Association of American Road Makers. These associations are working in the interest of improved interstate highways.

A number of interesting addresses are scheduled for this convention. An effort is being made to induce President Roosevelt to attend and address the assembled delegates. Invitations have also been extended to the governors of New York, Ohio, Indiana and Illinois, and the mayors of the cities along the route of the proposed New York-Chicago trunk line road.

The regular annual meeting of the National Association of American Road Makers will be held at Port Huron, Mich., August 29, 30 and 31.

EXPORTS OF AUTOMOBILES.

Exports of automobiles and parts from the United States for the month of June, 1905, as shown by the government report, were $313,499, as against $181,798 for the same month in 1904. And for the twelve months ending with June for each year in the last three years, the following interesting figures were given: 1903, $1,207,065; 1904, $1,895,605; 1905, $2,481,243.

COMMERCIAL GAINS FAVOR.

St. Paul Merchants Substituting Autos for Horse Drawn Vehicles.

Special Correspondence.

ST. PAUL, Aug. 5.—No feature of automobiling in St. Paul has shown a greater development during the past year than the commercial car. Not less than half a dozen firms have abandoned horses for delivery service this summer and have installed gasoline or electric automobiles, and several firms which have used automobiles for two or three seasons have purchased larger cars this year.

St. Paul is the commercial center for Minnesota jobbers, and it is among this class of business houses that the commercial vehicle has made its greatest headway.

Solid tires are used almost exclusively on commercial cars in St. Paul. Some of the stores, however, which employ small cars in delivery service use pneumatics, but even among these cars solid tires are making great headway. Some of the candy companies, as a means of advertisement, display in front of their windows the various cars they have used in the last five years, showing the development of the commercial automobile.

The roads in about the Twin Cities are generally in good condition, so that the expense of repairs is considerably less here than in some other cities. St. Paul also has several residence districts situated several miles from the downtown district, so that much better time can be made with the commercial automobile than with the horse-drawn vehicles.

JEFFREY OPENS MILWAUKEE BRANCH.

Special Correspondence.

MILWAUKEE, Aug. 5.—The Thomas B. Jeffrey Company, of Kenosha, maker of Rambler automobiles, to-day took possession of the C. G. Norton Company garage of this city, and will occupy it as a branch of its Kenosha factory. The garage is one of the largest and most up-to-date in the city, and was built under the direction of Mr. Norton at a cost of about $15,000. While the Norton Company will discontinue its garage business, smaller quarters will probably be secured and the company will continue the sale of automobiles. In addition to handling its machines, the Jeffrey's Company will also conduct a storage and rental business.

LOZIER TO MOVE UPTOWN.

Another modern garage and salesroom for the now rapidly growing uptown automobile center is that of the Lozier Motor Car Company, which is being erected at the northwest corner of Broadway and Fifty-fifth street, New York City, adjoining the Pope garage. The building will contain four stories and basement, and is being specially constructed. While it will not be the largest of the kind in the city, it will be equipped throughout with modern apparatus. The first and second floors will be used as display and salesrooms for automobiles and power boats, the third and fourth floors for storage purposes, and the basement will be fitted up as a repair department.

For several years past the general offices of the Lozier Company have been located in the Washington Building, 1 Broadway, New York, but since automobiles have been included in the product of the company it has been found advisable to secure other quarters.

WORCESTER CLUB QUARTERS.

Will Be Removed at an Early Date—Interested in Good Roads.

Special Correspondence.

WORCESTER, MASS., Aug. 5.—The August meeting of the Worcester Automobile Club was held last Tuesday evening in the club's quarters in the Bay State House, with a fair attendance. President John P. Coghlin occupied the chair and appointed a committee to consider the advisability of making a change in the headquarters of the club. It is only a mater of a few weeks ago that the club moved into three spacious rooms on the first floor front of the Bay State House. The present arrangement is distasteful, however, to a number of the members, and new quarters will be sought.

The club also voted to lend all possible aid to the selectmen of nearby towns in regard to the posting of cross roads and forks throughout Worcester county.

The proposed trunk line which will pass through Worcester, and which is to be a branch of the line between New York and Chicago, was discussed at considerable length. A great deal of enthusiasm was manifested, and Asa Goddard, a member of the good roads commission, was appointed to confer with other members in regard to the matter.

Harrison W. Bowker and Lucius I. Knowles, of Worcester and Harris W. Deane, of Spencer, were elected to the membership.

LEICESTER FLAG STATION.

Established by Worcester Club to Warn Unsuspecting Automobilists.

Special Correspondence.

WORCESTER, Mass., Aug. 5.—The Worcester Automobile Club has made a new move against Constable James M. Quinn, of Leicester, and his equally watchful fellow constables, for the flag goes up against him immediately. A flag station has been established just over the Spencer line as a result of the half-dozen motorists whom Constable Quinn has brought to the Central District court this week and fined. All automobiles headed for Leicester, beginning to-day, are flagged and warned of the laws of that town and of the activities of the constables.

Although stationed to warn automobilists of the actions of the Leicester constables, the flagmen will take and keep a record of every vehicle—horse-drawn or motor-propelled—in either direction. This record is being kept to demonstrate beyond the possibility of doubt, to the Leicester selectmen at least, that the automobile has come to stay. It is expected by members of the Worcester Automobile Club that the record thus kept will prove that automobiles passing this point, which is on the highway of the most direct route between Boston and New York, and the West, will outnumber horse-drawn vehicles at least two to one.

The flag station will be maintained at this point as long as the constables of Leicester continue active. Should the latter change the base of their operations, the flagmen will follow suit. The State highway is the checkerboard, and the Worcester Automobile Club intends to make a move every time the police force of Leicester thinks that a change of scenery is necessary for trapping unsuspecting automobilists.

The members of the club think that the maintenance of the flag station will prove cheaper in the end than paying the heavy penalties inflicted by Judge Utley when they are haled into his court.

With reference to the establishment of the flag station by the club, Constable Quinn states that it will be necessary for it to maintain the station until the snow flies, for he will be on duty at the same old place in the same old way while it is possible for automobiles to run in excess of the legal limit.

MILWAUKEE CLUB STIRRED

At Attempted Hold-Up of Automobilist—Will Offer Reward.

Special Correspondence.

MILWAUKEE, Wis., Aug. 5.—An attempted hold-up, or an act of vengeance on the part of farmers on reckless automobilists, took place about twenty-five miles south of Milwaukee last Wednesday evening. The object of the attack was Richard T. Robinson, secretary of the J. I. Case Threshing Machine Co.

Mr. Robinson was making a trip through the country with his wife and children when he was shot at from ambush, but fortunately the bullets whizzed over their heads. Inasmuch as Mr. Robinson was unarmed, the machine was speeded away.

Considerable feeling was aroused among members of the Milwaukee Automobile Club when it was learned that opposition to the free use of the automobile had taken the form of armed resistance, and it is possible that the club will offer a reward at its next meeting for the arrest of the guilty person. The club has on several occasions manifested its disapproval of scorching and reckless driving, and is ready to co-operate with the authorities in enforcing the State law, but steps will be taken to provide against a recurrence of similar interference.

"It is likely that the club will offer a reward of $50 for the arrest of the guilty person in this case, and that a standing reward of $100 will be offered for the conviction of anyone maliciously interfering with the rights of automobilists on the highways," said James T. Drought, secretary of the club. "While the club stands ready to assist in the enforcement of the automobile law, and is desirous of respecting the rights of others, at the same time it is equally anxious to assist in the prosecution of anyone endangering the lives of automobilists."

BUFFALO CLUB MEETING.

Articles of Incorporation Signed—Floral Parade August 17.

Special Correspondence.

BUFFALO, Aug. 5.—The formal papers incorporating the Automobile Club of Buffalo were signed by the board of governors of the club at a meeting held last Monday afternoon. Those present were Augustus H. Knoll, Dai H. Lewis, H. A. Meldrum, Charles Clifton, Edward H. Butler and W. H. Baker.

A report was made at this meeting to the effect that the work of putting up signs in the country in the direction of Batavia and Fredonia is progressing rapidly, and has been augmented by the donation by Charles Clifton, of the Pierce company, of a number of white enameled iron signs to be posted in places of danger or for assistance in direction.

It was decided to hold a floral and illuminated parade on the night of August 17, which is the night preceding the auto races at Kenilworth Park. This will also be auto night at Athletic Park, a Buffalo pleasure resort, and the parade will finish there. The cars will be driven around the cement walk in the park, and the park management will give a prize for the best decorated machine.

RACING IN WESTERN CANADA.

Winnipeg Club Holds Successful Meet—Will Promote Road Race.

Special Correspondence.

WINNIPEG, Canada, July 31.—The race meeting held under the auspices of the Winnipeg Automobile Club during the recent Industrial Exhibition proved a success in every way, and should do much to advance the interests of the sport in western Canada. There were a number of entries, and the several events were run off promptly and without accident.

The passenger race, which was a novelty in this section, brought out about a dozen starters. Each car carried three passengers, who were unloaded one at a time at the 1-8, 1-4 and 3-4-mile posts, and reloaded on the second round. J. Eaton, of Toronto, in a 30-horsepower Packard, finished in first place. Mr. Eaton also won the five-mile race for heavy touring cars, owners driving. The fight for second place in this event resulted in a victory for J. Moxam, Ford, with J. Mow's Marion third.

The three-mile race for light touring cars was really a duel between three Ford cars, J. Moxam winning by 50 yards, with G. Erzinger second.

The most interesting event of the meet was the five-mile free-for-all, in which there were four entries. The cars all got away well from a standing start, and maintained their positions until the end of the third mile, when J. K. McCulloch's 15-horsepower Darracq and Maxim's Ford dropped behind, leaving Eaton's Packard and the 16-horsepower Marion driven by Noah Davison to fight for the finish. Davison won in 8:21.

The club is now planning a road race to be held at an early date, open to any car in Canada.

ANNUAL MEET OF F.A.M.

Opens with Endurance Run from New York City to Waltham, Mass.

The first event in connection with the annual meet of the Federation of American Motorcyclists was started on Monday morning, August 7, when forty-eight motorcyclists set out on a 250-mile endurance run from New York to Waltham, Mass., where the meet is being held. The start was made from the club quarters of the New York Motorcycle Club, at 10 West Sixtieth street, New York, at 3 o'clock in the morning, the contestants being headed at the start by a squad of bicycle policemen. The running schedule calls for an average speed of fifteen miles an hour for the entire 250 miles, making the total running time from New York to Waltham 16 hours 35 minutes. Controls were established at Bridgeport, Hartford, Springfield and Worcester. The program at Waltham extends to Friday, August 11, and

includes the road and track races, tours, hill-climbs, economy tests and many affairs of a social nature.

NEW FACTORY FOR MUSKEGON.

Special Correspondence.

MUSKEGON, MICH., Aug. 5.—The chamber of commerce of this city has closed a contract by which the Continental Motor Company of Chicago will remove to this city and erect a new plant. The company will not build automobiles complete, but will manufacture the most important parts used in the construction of the machines. The principal building of the new plant will be of brick, 60 by 250 feet. It will be two stories high, and will cost about $20,000. The officers of the company will visit the city at an early date and select a site.

AUTO BUSSES IN SAGINAW.

Special Correspondence.

SAGINAW, MICH., Aug. 5.—Three motor 'buses of a special type, built by the Olds Motor Company, of Lansing, are in operation in this city, and will continue in operation during the street car strike. The 'buses were purchased by the street railway employes' union to run in opposition to the street cars. The machines are of 16 horsepower, and have a capacity of thirteen persons each.

It is planned to purchase three larger cars for use in connection with the three now running. The new cars will be of 20 to 22 horsepower, and will seat eighteen persons each.

RECENT INCORPORATIONS.

National Association of Automobile Dealers; principal office in Buffalo, N. Y. Directors: Wellington C. Jaynes and Harry C. Wilcox, of Buffalo; Harry Unwin, New York; Walter Githens, Chicago; Percy L. Neil, Philadelphia; Frank G. Smith, Jr., Detroit; E. P. Brinegar, San Francisco; A. C. Halsey, St. Louis, and William M. Murray, Pittsburg.

Jaynes Auto Co., Buffalo; capital, $100,000. Directors: W. C. Jaynes, F. I. Allger and C. B. Benney.

Manhattan Automobile School, New York; capital, $1,000. Directors: F. R. Jones, Ithaca; C. L. Cornell and J. B. Cornell, Orange, N. J.

Ideal Spring Manufacturing Co., Albion, Mich.; capital, $25,000. To manufacture automobile springs.

Automobile Lining Pneumatic Co., Providence, R. I.; capital $100,000. Incorporators: Lucian Hiroux, William Anger and Napoleon Hebert, of Central Falls; Joseph de Champlain, of Fall Fiver, and Philias J. Savoie, of Central Falls.

Stover Automobile Co., Freeport, Ill.; capital, $50,000. Incorporators: Jacob Weiss, J. F. Smith and D. C. Stover.

Wayne Automobile Co., Chicago; capital, $5,000. Incorporators: F. W. Cornish, Charles Freidberg, L. W. Freidberg.

International Speed Register Co., New York; capital, $600,000. To manufacture vehicle speed, time and stop indicators. Directors: E. A. Henkle and W. E. Hering, of Philadelphia; E. O. Towne, New York.

City Machine Co., Detroit, Mich.; capital, $25,000. To manufacture automobiles and auto supplies. Incorporators: Myron E. Benjamin, Lewis W. Raulet, George S. Benjamin, Frederick J. Nicholson, Alonzo L. Johnston, Franklin O. Prussia, Andrew W. Smith and Myron E. Benjamin, trustee.

News and Trade Miscellany.

The Frontenac Yacht Club, of Frontenac, N. Y., announces another three-days' power boat race meet beginning August 29.

An automobile race meet is now being planned to be held on the second beach at Newport the latter part of this month.

Charles L. Meade has been appointed superintendent of the Chicago Automobile Club, succeeding Robert W. Spangler, assistant secretary, resigned.

The Middletown Automobile Body Company, recently organized at Middletown, Conn., has commenced the manufacture of automobile bodies in wood, iron and aluminum. The company makes a specialty of the limousine.

It is announced through cable despatches that M. Charley, the Paris sales agent for the German Mercedes cars, will visit New York City about the 1st of September for the purpose of establishing a New York branch for the sale of these cars.

Through a compositor's error, the price of the Reo runabout appeared as $6.50 in the advertisement of the Reo Automobile Company, on page 85 of the Advertising Section of THE AUTOMOBILE of July 20. This should have read $650.

Homer G. Ford, his wife and babe, started from Eaton Rapids, Mich., on July 4 in a touring car from his home in Eagle City, Alaska. Mr. Ford is a government contractor in Alaska, and his baby is said to be the first white child born at Eagle City.

The Wayne Automobile Company, of Detroit, announces the establishment of the following agencies for the sales of its cars: E. H. Pashak, Sun Prairie, Wis.; Henry Wegman, Auburn, N. Y.; M. R. Brown, Passaic, N. J.; H. F. Tyler, Junction City, Kan.

The committee of management of the American Motor Car Manufacturers' Association will hold its next regular meeting in New York City on August 25, at which time it will confer with the officials of the Automobile Club of America with regard to the next New York show.

In order that those who compete in the Thousand Island auto-boat tournament may also be able to take part in the National Motor Boat Carnival on the Hudson River, New York, the dates for this latter event have been changed from Labor Day week to September 14, 15 and 16.

A movement is now on foot for the organization of an auto-boat club among the New York enthusiasts. A prospectus has been sent out by Hugh S. Gambel, and a call will soon be issued for a meeting at the Hotel Manhattan, when the matter will be formally taken up.

During the convention of police chiefs, sheriffs and prosecuting attorneys of the state recently held at Jackson, Mich., the visitors were treated to an automobile ride. There were twenty cars in the procession, and the run was made under the direction of Police Commissioner F. E. Palmer.

A movement is now on foot looking to the construction of a 40-foot driveway around Lake Chautauqua. The project was suggested by Leroy Pelletier, manager of the Duquesne Motor Car Co., of Jamestown, N. Y., and the matter was immediately taken up for consideration by the Lakewood Chamber of Commerce.

Since the destruction by fire some time ago of the plant of the Detroit Steel Castings Co., of Detroit, the company has been erecting new and improved buildings. The buildings are now practically completed, and equipped with modern machinery, and the company expects to put the plant in operation about September 1.

A special lug, known as the four-inch 1905 lug, is supplied by the Continental Caoutchouc Co., of 298 Broadway, New York, for use with the new style 4-inch rims adopted during the fall of 1904 by American manufacturers. These rims are 3-8 of an inch wider than the old style rims and it is said that, though of the same circumference as the old style rims, the new ones are apt to cause trouble with tires if the latter are not perfectly fitted. The new lugs are designed to eliminate this trouble.

Commencing July 1, the Automobile Outing Company, a concern recently organized in Baltimore, began operating an observation service, running a seventeen-passenger motor 'bus to all points of interest in Druid Hill Park. The car leaves the main entrance of the park every half hour. The park embraces 1,200 acres, and is visited daily by thousands of persons.

The Armac Company, of St. Paul, has been reincorporated recently under the laws of Illinois for $50,000, and will remove to its new quarters at 464-468 Carroll avenue, Chicago, about August 15. In addition to its present line of Armac motor bicycles, the company will manufacture a side carriage attachment and fore-car attachment to be used in connection with its motorcycle, and also a light runabout of 6 horsepower. There will be no change in the officers of the company.

The Pittsburg Motor Vehicle Company, R. B. Ward, Thomas B. Pfarr, Jr., and John R. Rush, incorporators, has applied for a Pennsylvania charter, with $200,000 capital. The new company has absorbed the Shadyside Motor Vehicle Company, which has been doing business for about eighteen months without a charter, and for the present will be located in the Shadyside district, Pittsburg. The company will manufacture automobiles for commercial use only, and plans to erect a large plant in 1906.

The electric automobiles manufactured by the Societe l'Electrique, of Paris, France, will be handled in the United States by a branch located at 152 West Thirty-eighth street, New York, under the management of Bernard Maurice Dufresne and Count Armand de Gontaut Biron. The machines are called the "Gallia" cars, and are said to be well and favorably known on the Continent. Each rear wheel is driven by a separate motor suspended in such a manner as to make the machine run very smoothly. The models illustrated in the catalogue that has recently been issued for the United States comprise the usual forms in which electric carriages are seen, including light delivery wagons and an opera bus.

The Independent Pneumatic Tool Company, of Aurora, Ill., has succeeded the Aurora Automatic Machinery Company, this being the result of a reorganization of the original concern, which took place on July 1. The capital was increased from $250,000 to $500,000. John P. Hopkins, a former mayor of Chicago, is president of the new company; C. E. Erikson continues in the treasurership and also acts as manager. The manufacture of Thor air-cooled motors and motor cycle parts will be continued, and pneumatic tools and air turbines will also be made an important part of the factory product. The general offices are in the First National Bank Building, Chicago, and there is also an office at 170 Broadway, New York. It is expected that the output of the factory will be considerably increased.

INFORMATION FOR BUYERS.

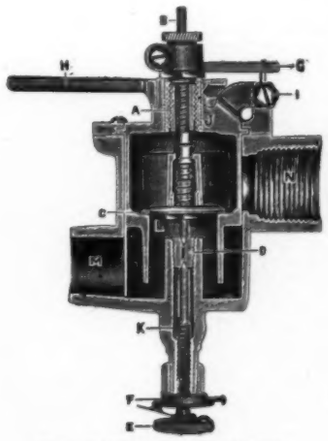
NOVEL SPARKING POINTS.—The new spark plug recently brought out by the Camp Cycle Co., of Columbus, Ga., is noticeable chiefly for its electrodes or sparking points, which are quite different from the usual form. The usual central rod, with the binding post on its upper end, carries at its

CAMP SPARK PLUG.

lower end a small wheel like a gear with sharp edged teeth, instead of a single wire point. The inner surface of the shell, where it is nearest to the central electrode, is cut with a coarse, sharp edged thread, there being two convolutions. Sparks occur at the points where the teeth of the little wheel cross the threads. As there are sixteen teeth in the wheel, and two threads, there are thirty-two possible points for sparks. The manufacturers state that when in operation the sparks occur first at one point and then at another, jumping from place to place. The sharp edges are said to be conducive to better sparking than blunt points.

MECHANICAL OILER.—Lubrication is of such vital importance to the explosion motor, especially when running at high speed, as in an automobile, that a great deal of ingenuity and labor have been exercised in the production of devices for insuring a positive and regular flow of oil to the various parts requiring constant and nicely regulated lubrication. The cylinder, for instance, of a gasoline motor cannot be occasionally soused with oil and then forgotten for a period; this would be fatal to its successful running. It must have a regular and uniform supply of oil at all times. A mechanical oiler recently brought out is that of the Auto Brass & Aluminum Co., of Flint, Mich. This oiler consists of a main case or tank containing the oil pumps and the mechanism for operating them, and also the lubricating oil. Thus all the parts are always thoroughly lubricated, if not almost submerged, and, protected from dust and dirt and from accidental knocks, they run under the most favorable conditions. There is a pump for every oil feed and also a larger pump, whose capacity is a little more than equal to the combined capacity of all the feed pumps, all operated by a single eccentric, the eccentric strap being an integral part of a crosshead that connects all the pump plungers, so that all move up and down in unison. The large supply pump takes oil from the bottom of the tank and delivers it into a header at the top of the tank. From the header the oil is distributed to the feed pumps by means of sight feeds, the quantity sent to each pump, and consequently the quantity delivered to each bearing, being regulated by needle valves. There is a relief valve in the header so that the excess oil pumped by the delivery pump is allowed to run back into the main tank; the valve does not open, however, until a considerable pressure has been attained, so that the oil is forced through the feed tubes at a pressure sufficient to dislodge any obstacle that might get in. The driving mechanism consists of a pulley for belt drive from the engine, the shaft on which the pulley is mounted driving the eccentric shaft by a worm gear. The same concern makes a specialty of manufacturing babbitt-lined split metal bushings, safety cranking devices, steering wheels, levers, pumps, engine parts and an extensive line of automobile and auto-boat parts and accessories.

FLOATLESS CARBURETER.—The float commonly used in carbureters for the purpose of regulating the level of gasoline in the spray nozzle is not an unmixed blessing, and many carbureters have been designed with a view to eliminating it while retaining the advantages of the float feed carbureter. One of the latest of these is the Gavelek carbureter, manufactured by the Lustre Chemical Co., of 1303 Michigan avenue, Chicago. In this carbureter, which is illustrated herewith, there is no float. The gasoline tank is



THE GAVELEK CARBURETER.

placed above the level of the top of the carbureter and the fuel flows to the latter by gravity, entering at *K*, the area of the opening through which it passes upward being regulated by a needle valve. Gasoline is admitted to the mixing chamber *L* when the suction of the motor piston raises the disc *C* from its seat, raising the needle valve, which normally closes the upper end of the gasoline passage through the plug *D*, and at the same time allowing the mixture to pass up from the mixing chamber and into the engine supply pipe *N*. Springs whose tension is adjustable keep the diaphragm and valve normally seated. A throttle is operated by lever *H*. It is stated by the manufacturers that the carbureter is automatic in its operation when it has been correctly adjusted, and that it is particularly quick in starting and economical in operation.

BULLOCK DUPLEX IGNITER.—A new model primary spark plug has been placed on the market recently by the Bullock Igniter Co., of Cleveland, O., formerly the Bullock-Beresford Co. Essentially, the plug is the same as the older models, but has been modified and improved in a number of details. It consists of a plug in which is incorporated a spark coil and vibrator, so that the usual separate spark coil is dispensed with, the plug being wired direct to the batteries and timer. A metal cover protects the parts from dust and dirt, and is readily removable for inspection. The manufacturers state that the Bullock Duplex plug is suitable for any motor, whether single or multiple cylinder, and that it can be operated on four cells of dry battery. If desired, a direct current magneto can be used instead of the dry cells.

TRIUMPH GAUGE PATENTS.—The Boston Auto Gauge Co., of 614 Old South Building, Boston, Mass., which manufactures the "Triumph" gauge for indicating the quantity of gasoline in the automobile tank, states that a series of five patents has been granted on this instrument, covering its construction very broadly. A patent was recently granted Mr. Martin, inventor of the gauge, for a tool designed to cut a circular piece out of a tank without allowing chips to fall in, the removal of the piece permitting the insertion of the gauge—a method which is recommended as being better than screwing the device into the filling hole, from which it must be removed every time the tank is filled.

ABOUT SWINEHART TIRES.—The Swinehart Clincher Tire & Rubber Co., of Akron, Ohio, manufacturers of the Swinehart solid rubber tires, states that the riding qualities of solid rubber tires are much improved by a rebeading process which this concern is introducing. The company has also found that the greater the concavity of the sides of their tires, the greater will be the resilience. If the tire is found to be too solid, one wheel is jacked up and the engine started so as to cause the wheel to turn. While turning, a piece of sharp sandstone is held against the tire at the proper place; this will quickly cut the tire down to the required extent. The tread may be beaded or furrowed by the same process, and this is said to have the effect of improving the riding qqualities. It will readily be seen that care must be taken in doing this not to cut away too much of the rubber; otherwise there will be danger of ruining the tire by making it too weak to safely carry its normal load.

TRADE LITERATURE.

Powell Manufacturing Co., Clinton, N. Y. Booklet illustrating and describing the Twentieth Century timer.

Sparks & Wray, 1557 Broadway, New York. Booklet illustrating and describing the "Uneedme" tools for removing and replacing pneumatic tires.

Van Husan & Farr Co., 520 Hammond Building, Detroit, Mich. Circulars describing the Snell hydraulic system for handling gasoline and oils, consisting of means for forcing the gasoline out through an outlet at the top of the tank by forcing water in at the bottom, the difference in specific gravity preventing the mixing of the two liquids.

Post & Lester Co., Hartford, Conn.—Catalogue of "Royal de Luxe" acetylene searchlights and lamps for automobiles and launches; also generators for same.

G. P. B. Hoyt Jamaica, Borough of Queens, N. Y.—Circular concerning an opposed cylinder motor in which the cranks are driven by a yoke in which are sliding blocks.

Western Motor Co., Logansport, Ind.—Circular illustrating and describing the well-known Rutenber two and four cylinder vertical motors; also mufflers and ignition timers.

Induction Coil Co., Miller Building, Milwaukee, Wis.—Catalogue of coils, spark plugs, switches, cable and other ignition apparatus. Also an automatic carbureter and an ignition timer, both of new design.

The Vanadium Alloys Co., 25 Broad Street, New York.—Booklet giving the results of numerous tests of "Vanadium" steel, which is said to be superior to other steels in many respects.

Rose Mfg. Co., 910 Arch Street, Philadelphia.—Circular describing "Neverout" mirror lens searchlights with Mangin mirror lenses; kerosene lamps for automobiles and launches, and acetylene generators of different sizes.

Buckeye Mfg. Co., Anderson, Ind.—Circular describing the performance of the Lambert friction drive car in the Chicago-St. Paul tour, and giving illustrations and short descriptions of the various styles of Lambert cars.

Phillips Motor Works, 405 Tacoma Building, Chicago.—Illustrations of Phillips double opposed cylinder motor and transmission gear mounted in a single frame; and Phillips air-cooled stationary gasoline engine, mounted on a base with tank and battery box.

T. S. Culp, Canton, O.—Circular illustrating and describing a 9-horsepower double opposed cylinder motor, which is furnished complete and ready to run, or else, if so desired, in the form of rough castings to be finished and assembled by the purchaser. Also a 3 1-2-horsepower single cylinder vertical air-cooled motor, which is sold in the same way.

Independent Pneumatic Tool Co., First National Bank Building, Chicago, and 170 Broadway, New York.—Catalogue of pneumatic drills, hammers and air turbines, flue rollers and accessories for same. This is a particularly interesting little catalogue to those who have to do with pneumatic tools, as it not only describes the tools made by this concern, but gives some useful information on the care and use of pneumatic tools generally.

Trebert Gas Engine Co., 163 West Main Street, Rochester, N. Y.—Circulars describing and illustrating the gasoline motors made by this concern, consisting of two-cylinder vertical 10-horsepower; double opposed cylinder 15-horsepower; and four-cylinder vertical 22-horsepower. Also an expanding clutch, and a sliding gear transmission giving three forward speeds and reverse, with the drive direct on the high gear.

Webster Mfg. Co., 1075 West Fifteenth Street, Chicago, Ill.—Booklet explaining and illustrating the Hedgeland anti-skid solid rear axle for automobiles. This is a solid axle in which no differential gear is required, there being a clutch at each end which permits the outside wheel to run faster than the axle when turning corners; it works in the same way whether the car is running forward or backward. One of the claims made for this axle is that it prevents skidding in a very large measure.

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